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Trabajo de final de carrera

SAP Web Applications

Autor:
Jesús Vitales Martin, Spain.

Supervisor:
Jens Cramer Alkjærsig,
Denmark.

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1. Background

- **SAP. The third biggest company of software**

SAP (Systems, Applications and Products) is the first provider of business software applications in the world. As company, it sells a group of software solutions for business, the most important of them, mySAP Business Suite, which gives scalable solutions to improve continuously, with more than 1000 business processes considered the best business practices. SAP is considered the third independent provider in the world and the biggest European software developer.

- **Internet. Number of users increases more than 100% around all over the world**

While in 1995 the number of American internet users were the 65% of the total, in 2006 are only the 23%. It is mainly consequence of the growth of the number of users in the regions of Asia and Europe, who arrive to 35% and 29% respectively of the total. The number increases everyday, as well as the e-commerce or the banks on-line. Internet has one billion users. A second billion users will follow in the next ten years.

- **Enterprising ideal**

One good day we decided to do a project in this university and we met 4 students of different degrees, but interested in the same ideas. We formed the group one student of marketing, one of business and two IT in computer science. We decided to create a company to develop, manage and improve software for business applications.

So now with these three main points the question is, why don't we mix the powerful tools that SAP systems and Internet offer us with our illusions of work in something useful and with future?

LET'S DO IT!

2. Group Members

This project report has been written by four international students at Vitus Bering Denmark: Núria Monné Perez, Spain, Jesús Vitales Martin, Spain, Myrto Kouroglou, Greece and Andrea Foieri, Italy.

- Business students

Myrto Kouroglou, 21

Athens, Greece, 07.01.1986
Fourth year in Business and Ecomony Departement, Marketing Course
Technological Educational Institution (TEI) of Athens
Piano, Theather, Cinema, Pilates

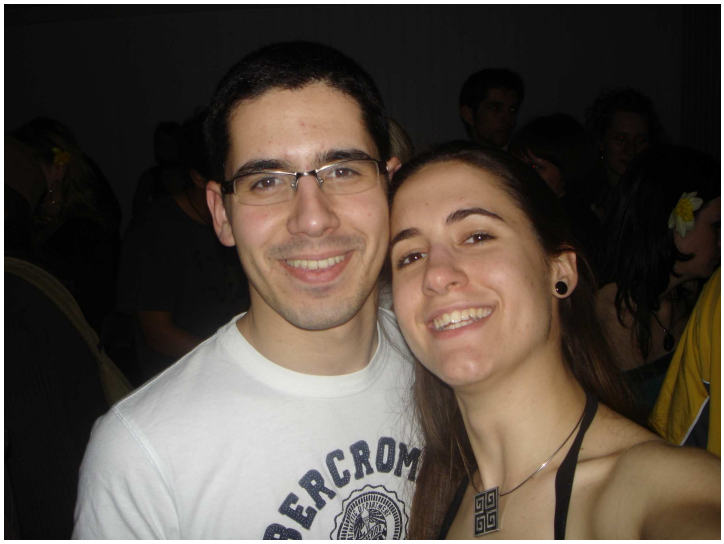
Andrea Foieri, 23

Turin, Italy, 07.01.1984
Fourth year in Business Administration
University of Economics – Turin
Volleyball, Swimming, Piano, Music

- IT students

Jesús Vitales Martín, 21

Monzón, 25.06.1985
Sixth semester in Computer Science,
University of Lleida
Swimming, Ski, Cinema, Reading.



Núria Monné Pérez, 22

Lleida, Spain, 13.03.1985
Sixth semester in Computer Science, University of Lleida
Break Dance, Draw, Cinema, Music, Computers.

3. Executive Summary

This project report has been written by four international students studying at the university of Vitus Bering Denmark. Its purpose is to provide a closer view on the establishment of a new company, producing software applications, in particular SAP applications. We started our work from a problem, that was finding a new way to manage projects and for this reason our focus has been on a particular kind of program, enabling the companies and the workers to control their projects and the hours spent by each employee on each project.
The product is a novelty on the market in the way of its utility and flexibility. In order to present it on the market, we want to establish a new company, a private limited company and start with the business. The chosen market is Denmark, because of its business environment, consisting of a well-developed infrastructure network, one of the most advanced telecommunication infrastructures in Europe, a favorable tax climate and the Europe's most flexible labour market with high qualification and excellent language skills. Moreover, Denmark is worldwide recognized as one of the most advantageous country to locate a business. Our headquarter will be situated in Aalborg, in the North of Denmark, composed by a Representative Office, where the General Manager and the Salesman will work, and a Software Development Office, where the IT engineers will develop the product. The business will start with 4 employees, but our plan is to expand to 5 in three years and to 6 by 2011.
Our target group is Danish companies, medium and large enterprises. After having some profits we will expand in other market segments, like small enterprises and market outside of Denmark. In order to make our product known to the market, we have planned an advertisement strategy, based on departmental press, personal selling and trade fairs.
In the first year we are expecting to sell approximately 60 software applications, with the aim to reach around 100 units sold in the fifth year of business. The final price of the product is 10,000 €. The turnover for the first year is estimated to be 600,000 €, and the profit will be the first year negative, -18,500 €, but later on it will be positive, reaching 77,397 € in the fifth year of business.
In the first years we will have to face financial cash out required to support the investments and the growth of the business and therefore we are going to take a loan from the banks, approximately 300,000 €.
After the start of the business we are expecting to expand our activity by opening more representative offices and, in the future, by extending to other European markets.

4. Establishing the Company

4.1 Business Environment

We have decided to establish our company in Denmark, first of all because Denmark offers investors a wide range of possibilities for establishing a business, enabling to tailor our investment plans to suit our business needs.
According to the Economist Intelligence Unit, Denmark is the world's most advantageous country to locate a business seen from a five year investment perspective. In a rank of around 180 countries all over the world, Denmark is in the first positions for the challenges of launching a business. This challenges are shown in the table below.

Ease of….	**2006 rank**	**2005 rank**
Doing business	7	7
Starting a business	14	15
Dealing with licenses	6	8
Employing workers	15	14
Registering property	36	31
Getting credit	13	19
Protecting investors	19	18
Paying taxes	15	19
Trading across borders	3	3
Enforcing contracts	1	1
Closing a business	20	24

Considering this, we are able to state that Denmark is one of the best country where to establish a new company, especially because of its "business environment". As a matter of fact, some of the main important reasons for choosing Denmark are the following:

- a natural gateway to the Scandinavian countries and the Baltic area - Copenhagen Airport is the main hub in Northern Europe and Europe's most efficient airport; a high-quality motorway network means swift and easy access to all markets in the Northern European region;
- one of the world's top 3 flexible labour markets;
- one of the most advanced telecommunication infrastructures in Europe with world leading use of PC, Internet and Broadband;
- a company tax rate of 28% and expatriates can benefit from a special tax regime;
- a well-educated population with a high proportion of university graduates and excellent language skills.

Now we are going to explain in details the advantages to establish our business in Denmark, most of them linked with the reasons above mentioned.

Infrastructure
Denmark has a well-developed network of motorways. The high-quality motorway network means swift and easy access to all markets in the Northern European region. Through the opening of the Øresund bridge in July 2000, the only bridge in the world connecting two countries, Denmark is

now the gateway to the Scandinavian countries and the Baltic area. There is direct access from Copenhagen to the city of Malmø in Sweden either by train or car.

A small country with four international airports
Copenhagen Airport is the main hub in Northern Europe. It is SAS' principal airport and it has been retained by DHL as its Northern European hub. In 2005, the Air Transport Research Society named Copenhagen Airport the best airport in Europe.
The airport is located only 8 km from the city centre and Copenhagen Central Station can be reached in 15 minutes. 63 airlines operate from the airport and serve all together 125 destinations. Besides Copenhagen, Denmark has three other international airports, Aarhus, Aalborg, and Billund, all located in the peninsula of Jutland.

Highly developed ICT infrastructure
Denmark has one of the most advanced telecommunication infrastructures in Europe and the network is fully digitalized. Denmark's penetration of mobile telephone subscriptions is ahead of the average European level.
Denmark is characterized as a top-ranked country with regard to penetration rates for PCs and household Internet (broadband) access. Denmark is in the global Top 5 what regards computers per capita, Internet Users and Broadband Subscribers.

Taxation
Denmark has a favorable tax climate thanks to a corporate tax rate of 28%, an extensive network of tax treaties and attractive rules for expatriates. Taxation obligations for physical goods ordered via the Internet, as with any other transaction, require payment of VAT (currently at 25%) and, if the goods are imported into the EU, import duties.

Europe's most flexible labour market
The Danish workforce is among the most productive in Europe and no restrictions apply regarding overtime work, allowing companies to operate 24 hours a day, 365 days a year. Contrary to most European countries, basic practices in the Danish labour market are mainly founded on collective agreements between the employers' and the employees' representative organizations, thus ensuring a high degree of consensus in the labour market. Most of the working conditions are negotiated at company level in accordance with each company's specific needs. Together, employers and employees reach mutually binding agreements on labour issues and as a result, Denmark has a low frequency of strikes. In Denmark most people are insured against unemployment and thereby guaranteed a high level of social security, which results in a relatively high degree of labour market flexibility.
Compared to other European countries the Danish rules for termination of contracts are very liberal. Provided that the legal and agreed notices are respected, the employer is entitled to dismiss skilled and unskilled workers at any time, without incurring costs from day to day.
This makes it easier for an individual business to adjust the size of its workforce in Denmark, compared to other European locations.

Labour Qualifications & Education
The excellent reputation of the Danish labour force can to a large extent be ascribed to the traditional awareness in Denmark of the importance of education. The general education system enjoys high priority and receives substantial public funding. The result is a well-educated population with a high proportion of university graduates. Great emphasis is placed on lifelong

access to education, and Denmark is particularly noted for producing highly skilled technicians and engineers.
Today, 83% of young people complete a secondary education programm and 40% complete higher education. In addition, great emphasis is placed on providing further education to the large proportion of the current workforce educated only to elementary school level. This is one of the reasons why Danish businesses can maintain their competitiveness on a high level.

Language skills
Denmark's international outlook is reflected in the fact that the population commands excellent language skills, English being considered a natural second language. Cross-border communication in Scandinavia is aided by the fact that Danes, Norwegians and Swedes are highly adept at understanding each other's languages. Among the younger generations especially, it is common to be skilled in several European languages, including German, French and Spanish.

Establishing costs
This is one of the main advantage, concerning the costs we will have to face in order to establish our company. First of all Denmark has low office occupancy costs and some of the world's lowest data and telecommunication rates. Moreover, salaries for management and scientists are really competitive if compared with other countries.

Economy
- Low inflation: 1.8%
- High GDP per capita: 37,000 US$
- Low corporate taxation: 28%
- Low taxation for expatriates (researchers and management): 25%
- Low social security contribution for employer: 1.21%
- Stable economy and currency
- Easy international and regional accessibility

4.2Our Framework – Development, Design & Costumer Involvement

Denmark holds a strong position in software development and ,in addition, the Danish mentality has a unique focus on functionality and design. Danish researchers are renowned for their aesthetic sensitivity and ability to design appealing models and particularly for thinking in totalities.
Software companies located in Denmark are not only able to profit from the high level of education in Denmark, but also the close relationship with customers. Customers often play an active part in developing new technology, thus enabling developers to create highly user-friendly products. Combined with other factors, this makes Denmark the world's best test market.
Using Denmark as a test market gives international corporations the advantage of being able – within a short period of time – to adjust and improve a product before releasing it on the world market. From launch to take-off, Denmark boasts an average of 3.3 years, while larger European markets such as Germany and the UK take 2-3 times as long.

4.3 The Labour Market

We are going to spend some words in order to illustrate the Danish labour market as we think that, as labour is an important productive factor and it consists of human beings with needs and feelings, it's necessary to consider carefully the characteristics of the labour market of the country where we are going to establish our business, also in order to be able to forecast the costs that our company will have to face.

The market

Denmark has a population of 5.3 million. The workforce comprises 2.8 million people. The unemployment rate is just around 6%.

The Danish Employers' Association (DA) is the central organization including about 14 employers' associations in the private labour market within manufacturing, trade, transport, service, building and construction. DA has 29,000 firms employing a total of 650,000 people. Members of DA are under an obligation to enter a collective agreement with their employees.

The Danish Federation of Trade Unions is the central organization including about 20 unions having a total of 1.4 million members and protects the interests of employees in relation to the employers' associations and authorities.

The Danish labour market is governed by the provisions of the Salaried Employees Act, the Act on Employment Contracts, the Cash Benefit Allowance Act and other related labour legislation. Employees paid by the hour are widely covered by collective agreements.

Main provisions of employment acts

- Working hours and holidays

Usually, the working week is 37 hours in Denmark. Once employed for 12 months, employees become entitled to 5 weeks of paid holidays. In addition to this, an increasing number of Danes are entitled to some extra 1-5 days of holydays. Holidays must be spent within the holiday year, which runs from 1 May to 30 April.

Salaried employees receive full salary during holiday. For employees paid by the hour, the employer pays in a holiday allowance corresponding to 12.5% of the gross pay. When an employee resigns, the employer pays in an amount which corresponds to the remaining, unspent holidays.

Usually, all such payments are made to a public fund, which is responsible for paying out holiday pay to employees when they spend their holidays.

- Maternity, parental and childcare leave

Women are entitled to maternity leave from four weeks before the child is expected to be born. Once the child has been born, the mother is entitled to 14 weeks of maternity leave, whereas the father is entitled to two weeks' leave. In addition to this, the parents are entitled to a prolonged parental leave for a total period of 32 to 46 weeks. The employer is under an obligation to pay half the salary earned by salaried employees for about three months. The parents may qualify for daily cash benefits from the state for a total period of 32 weeks. The daily cash benefits may be shared between the parents.

- Sick pay

Salaried employees receive their full salary while absent due to sickness. In case an employee is absent due to sickness for more than two weeks, the employer will be reimbursed partly by the State. Employees paid by the hour will receive sickness benefits from the employer after eight weeks or 74 hours of employment or – if employed for a shorter period of time – from the Government.

- Employment contract

If the employment lasts for more than one month, and if the average weekly working hours exceed eight hours, an employment contract must be drawn up not later than one month after the commencement of the employment. The employment contract must be drawn up according to the minimum requirements laid down in the Danish Salaried Employees Act. If no employment contract is prepared or the minimum requirements are not met, the employee may be entitled to compensation.

- Termination of employment

A salaried employee may resign at one month's notice, unless a longer notice period has been agreed. This applies irrespective of the duration of the service. If an employer wants to dismiss a salaried employee, the notice she/he must give is one month for employees who have at least six months of service. After nine years of service, the maximum notice period of six months shall apply, unless a longer notice period has been agreed. The resignation of employees paid by the hour is regulated by various agreements. Generally, the notice period is shorter than the one applying to salaried employees. Generally the reason for termination of employment must be sound.

- Severance pay

If given notice after having been employed for 12, 15 or 18 years, a salaried employee will usually be entitled to a severance pay of 1, 2 or 3 months, respectively. The severance pay is paid in addition to the usual salary during the period of notice.

Employee taxation

Now we are going to give some information regarding employee taxation in Denmark. The reason of this focus is that we believe that our company will achieve in the year an European status, that means that it's important for us to consider employing workers coming from all Europe and therefore we have to know how the employee taxation system for resident, resident outside Denmark and foreigners works.

- Residents in Denmark

A person resident in Denmark, and thus fully liable to pay tax in Denmark, pays tax on his or her world-wide income, irrespective of whether the income originates in Denmark or elsewhere. For tax purposes, a person is deemed to be resident in Denmark if he or she has access to a residence all year round, or if he or she is staying in Denmark for more than six months.

The Danish tax system is progressive, which means that the higher the income is, the higher will the tax rate be. Taxable income includes:

• personal income, which is typically wages/salaries or profits on business activities
• capital income, which is typically interest income less interest expenses
• deductible expenses, such as travelling expenses and trade union contributions.

- Residents outside Denmark

Persons resident outside Denmark are subject to limited tax liability in Denmark as regards Danish income earned while they are working in Denmark, certain retirement benefits from Denmark, income from a permanent establishment in Denmark and profit on real property situated in Denmark. The tax rates for persons with limited tax liability are the same as the ones applicable to persons who are fully liable to pay taxes.

- Tax treaty

An employee stationed temporarily in Denmark by his/her employer is in principle liable to pay tax in Denmark on his/her income. However, Denmark has adopted the OECD model tax treaty with the purpose of avoiding double taxation, and therefore Denmark observes the rules established for employees working temporarily in Denmark. Consequently, employees working temporarily in Denmark are not liable to pay tax on earned income if:

• their stay in Denmark does not exceed 183 days within a 12-month period
• the employer is not domiciled in Denmark and
• the salary is not charged to a permanent establishment which the foreign employer has in Denmark.

- Foreign workers/expatriates

Denmark has introduced internal cross-border worker rules applying to persons who may, for example, live in another country but work in Denmark for a Danish employer. This situation typically arises between Germany/Denmark and Sweden/Denmark. Consequently, such persons are considered to have a limited tax liability in Denmark, which implies that expenses that are not related to earned income are not deductible. Such expenses may typically be an individual's interest expenses in his/her country of residence.
Consequently, Denmark has introduced a special rule to the effect that cross-border workers can deduct all types of deductible expenses in accordance with the rules applying to persons who are fully liable to pay tax if the Danish income represents at least 75% of the person's aggregate income.
Employees working in Denmark for a Danish employer may, in some situations, be taxed at a rate of 25% (the so-called Expatriate Tax Regime, the specialist regime or the researcher regime). Employees may join the Expatriate Tax Regime for one or several periods of a maximum duration of 36 months within a 10-year period, counting from the first employment in Denmark.

Social security contributions

- Danish rules

Basically, people residents in Denmark are covered by the social security system in Denmark. Social security in Denmark is provided in the form of health insurance, sickness benefits, retirement pension, the 'child cheque', contributions under the Danish Labour Market Supplementary Pension Scheme and industrial injury insurance.
The employees pay most of the labour market contributions themselves. The current rate is 8% of wages/salaries and in addition to this a special supplementary pension contribution of 1% is payable.
The employers' contribution to the Labour Market Supplementary Pension Scheme are limited to approximately DKK 150 (20 euros) per month for each individual full-time employee. Besides, employers are obliged to take out industrial injury insurance for their employees.

- EU rules

Regulation No. 1408/71: The regulation lay down which country's legislation is applicable in various work situations. Basically, the rules of the country in which an employee works will apply. This also applies where an employee is resident in one country but works in another. For self-employed persons, the main rule is that the rules of the country in which they carry on their business activities apply. An employee can only be subject to the laws of one member state. The term 'employee' refers to a person who is insured against industrial injuries under the current rules (obligatory or voluntary insurance).

4.4General Business Regulations

As we are going to do business in Denmark, we have to know some general regulations concerning the formation of contracts, the sale of goods and the supply of services, the system of competition.

- Principles of contract law

Danish law would not impose any formal requirements on the formation of contracts. Almost any contract could be oral, even if a written contract would be advisable.
A contract may be void by reason of duress, fraud or unreasonableness. A contract may also be held unenforceable if its enforcement would be deemed unfair or unreasonable.

- Sales of goods and supply of services

As we are supplier of services, we cannot refer to the Sales of Goods Act. There are not specific provisions or regulations regarding the supply of services and it would therefore important to ensure that an agreement covers all the key issues.

- Competition

The Danish Competition Act contains two prohibitions: anti-competitive agreements and conduct, which amounts to an abuse of a dominant position. The Act is closely modeled on the equivalent provisions of European competition law.

4.5Intellectual Property Rights

Denmark is a signatory to most international conventions regarding intellectual property rights.
The system for the protection of intellectual property rights is well-developed in Denmark. Business names, trademarks, inventions and designs can be protected form competitors by registration. Moreover, the intellectual property rights mentioned above may often be licensed, even if there are no specific laws governing licensing.
As we are engaged in the production of computer programs, our reference intellectual property rights is called copyright, that is an unregistered right. The protection of copyright would not depend upon formal procedures. The work will be protected by copyright as soon as it is created and is sufficiently original. Therefore there would be no official action to take in order to protect our copyrights.

4.6Company's Structure, Name and Location

After some researches, we have decided that our business solution will be a benchmark Northern European start-up structure, that means:

number of employees: 4

- General Management - 1
- Sales & Marketing - 1
- Information Technology R&D - 2

At least for the first years we are going to address to an external consulting company for the Administrative function and we refer to an inventory service for the management of the inventories.

We have decided to refer to this solution because the Northern European start-up structure has been identified like the best solution for start-up companies.
Factors included in the benchmark were:

cost factors

- total employment costs
- office costs

qualitative factors

- General Business Environment
- Human resources
- Flexibility of labour and regulations
- Infrastructures and Communications
- Living environment / Attractiveness to international staff

The name of our company will be *"M.N.J.A. ApS"* and will be located in the city of Aalborg, in the North of the country.

4.7Corporate Form and Registration

As SAP applications provider, we are going to produce services. Services may be performed in Denmark through a distribution centre, regional headquarters, or a shared services centre. In this country services are most often carried out through a Danish company (A/S or ApS), but may also be performed via a branch office.
Therefore in the next table we are going to present some data and information related to these kinds of legal forms in order to choose the best solution for our business.

Corporate Forms

	A / S	**ApS**
Application	Middle-sized and large companies. Compulsory to be listed on the Copenhagen Stock Exchange	Small and middle-sized companies
Registration	Must be registered at the Danish Commerce and Companies Agency	Must be registered at the Danish Commerce and Companies Agency
Capital requirement	Min. DKK 500,000 (around 65,000 euro)	Min. DKK 125,000 (around 15,000 euro)
Liability	Limited to the value of shares subscribed	Limited to the value of shares subscribed
Management	Mandatory two-tier system. A Supervisory Board of minimum 3 persons, and at least one CEO.	Optional one- or two-tier system with either a Supervisory Board or an Executive Board (CEO), or

		both.
Place of management	No requirements apply as to the residency of the members of the executive (CEO) and Supervisory Boards.	No requirements apply as to the residency of the members of the executive (CEO) and Supervisory Boards.
Accounting	Annual financial statements audited by an accountant	Annual financial statements audited by an accountant
Tax	Corporate income tax rate of 28%	Corporate income tax rate of 28%
Corporate Law	The Danish Act on Public Limited Companies	The Danish Act on Private Limited Companies

Looking at these information, we can say that the best solution to start-up a business is the second one, as our company will be a middle-sized company with a smaller capital requirement.
Nevertheless we are going to consider also some new corporate forms, linked with new European Union rules. As a matter of fact, Denmark has fully implemented the EU rules regarding the European public limited company (SE company) for both corporate and tax purposes. The legal framework of a SE company is to a large degree subject to national company laws. It's possible to change the nationality and place or residence of a company without a liquidation and re-founding. The SE company must be registered at the Danish Commerce and Companies Agency, if the official address is in Denmark. The minimum capital requirement is 120,000 euros. The liability of the shareholders is limited. A SE company must have annual financial statements prepared by the company, audited by a State Authorized Public Accountant. A SE company registered in Denmark is subject to a corporate tax of 28%.
Moreover, another way to establish a company in Denmark and of course in Europe is the EEIG – European Economic Interest Grouping, that is a cross-border general partnership to be formed by European business persons and/or business entities, with the purpose of performing certain business tasks in the EU, save for the sheer accumulation of capital. Also this entity must be registered at the Danish Commerce and Companies Agency when the head office is in Denmark. The important fact is that no capital is required and there is no requirement to prepare separate financial accounts. The taxation is on individual basis, that means that each member is subject to individual taxation and the EEIG is treated as a transparent partnership.

At the end, after careful analysis, we have decided to choose to establish our company in the form of a Danish ApS and consequently we are going to apply for the registration at the Danish Commerce and Companies Agency and to choose our Chief Executive Officer, that will represent our Executive Board. For all the requirements stated by the law, we are going to refer to the Danish Act on Private Limited Companies.
The company must be registered within 8 weeks of the date of the Memorandum of Association. The registration takes approximately 1-4 weeks and is exempt from charges. The following information is required for purposes of the application for registration to the Danish Commerce and Companies Agency:

- Memorandum of Association
- Documents referred to in the Memorandum of Association (Articles of Association)
- Documentation for cash payment of the share capital (statement of account)
- A copy of the minutes of the statutory general meeting
- Information about the name, address and civil register number/CVR number of the founders and members of the supervisory and executive boards
- Copies of passports as documentation for EU citizenship
- Information on the name and address of auditors.

After the registration at the Danish Commerce and Companies Agency we will receive an identification number, known as a CVR number.
Our company can be established in three different ways:

- on-line registration
- paper registration
- acquiring a shelf company

We are going to choose the first option as by this way a new company can be incorporated and ready to operate within a few hours by using the on-line electronic registration system provided by the Danish Commerce and Companies Agency.

4.8 Incentives

- Government incentives

There are almost no direct subsidies to individual business in Denmark. However, financial grants are made to enterprises in some regional development areas, including North Jutland, the region where we are going to establish our company. Moreover, special grants are made to small and medium sized enterprises and therefore we are going to apply for both of them.
We are also going to apply for favorable loans and guarantees which can be obtained from Vækstfonden (the Danish Growth Fund) for research into and development of new or improved products or services, including the creation of international competence and expertise.

- Financial assistance from EU

EU makes certain grants and subsidies loans available from EU agencies in order to support the creation of new companies and consequently we are going to apply for them. Moreover companies can obtain funding for R&D activities from The European Union's Sixth Framework Programme for Research and Technological Development. Support can be granted to projects involving European-based companies and/or research institutions, related to a range of R&D activities.

- Nordic Investment Bank

Corporate investments in plants and machinery within manufacturing industry and within the trade and service sector, cross-border investments, investments within the energy sector, infrastructure projects, research and development, and foreign investment in the Nordic and Baltic member states may be financed through the Nordic Investment Bank. Therefore we are going to apply for them.

- Industrial PhD Program

Companies located in Denmark can obtain a grant to employ a PhD student who will, over a three-year period, perform a focused R&D project in the company. The grant from the Danish state amounts to 50% of the salary of the PhD student.

As we strongly believe in the importance of employing young people and qualified students in order to allow them to show and use their knowledge and their skills, especially in the next years we are going to apply for this kind of grant.

4.9 Financing the Business

As it's highly recommended, we are going to seek professional advice in order to negotiate with investors and finance institutions.
Nevertheless, when setting up a business in Denmark finance can be raised from the following sources:

- Banks

Finance through banks can be provided as a line of credit or an overdraft, a term loan, a foreign exchange loan or a combination of these.
A line of credit or overdraft is intended to finance working capital. It is therefore used as a working account with cheques and electronic transfers being drawn on the account. Interest is at a variable rate and is calculated on the basis of the use of the overdraft facility, while any quarterly commission payable is usually calculated on the maximum of the overdraft. A fee may be charged to establish or renew the loan.
Term loans are usually for a long period, for example 5 or 10 years. Capital and interest are repaid over the period of the loan, and the interest rate is normally variable. Security is often required in the form of a charge over the assets of the business or guarantees by the owners or directors.
Foreign exchange loans are usually obtainable at the foreign market interest rate plus a margin. The loan is repaid by instalments or in full at the end of the loan period.
Connecting with our reality, we are going to open a line of credit and a term loan for 10 years with Nordea Bank Denmark, which offer us the best solution in term of rate of interest (11% for the first loan and 12% to renew it, in the amount and in the loan period). In order to set up a corporate bank account, a "request for opening a corporate account" form is needed. The complete request must be accompanied by the following documents:

- power of attorney, filled in and signed
- copy of certificate of registration (name, registration number and address)
- copy of memorandum and articles of association
- copy of minutes of company's board meeting specifying the person authorized to sign for the company
- copies of valid passports of the beneficial owners and of the persons authorized to sign for the company and act on behalf of the company
- the company's latest annual account and other general information on the company's line of business
- an indication of the number and size of the expected transactions on the account.

After the verification of the validity of the documents we will receive an account opening letter stating when the account will be operational.

- Leasing of equipment

If our business needs additional finance, leasing would be a good source of finance when assets are required. The lessee never owns the leased asset; payments are made for the use of the asset but the lease agreement may be structured either as an operating or a financial lease arrangement; the respective asset type permitting the lease format preferred by the lessee.

- The Mortgage Credit System

The Danish mortgage credit system is efficient and used extensively for long term financing. The system is based on bonds, which are traded publicly. This results in interest rates being very competitive, with the possibility of interest rates being fixed annually, or for a period ranging from 2 to 30 years.

4.10 Tax Authority Registration and Corporate Taxation

Anyone wishing to establish a business in Denmark should consider the tax implications carefully.
First or all our company must be registered for taxation purposes with The Central Customs and Tax Administration. The registration form can be obtained in the website of the CCTA and the application must be handed in eight days prior the commencing of the business activities. The processing of the registration of the application takes approximately eight days and then the CCTA issues a proof of registration, which will serve as our company's VAT registration. In the registration form, we are required to provide the following information:

- the activities and assets of the company
- the number of employees
- the working hours of the employees
- the first employees date of employment
- the full name and addresses of the promoters.

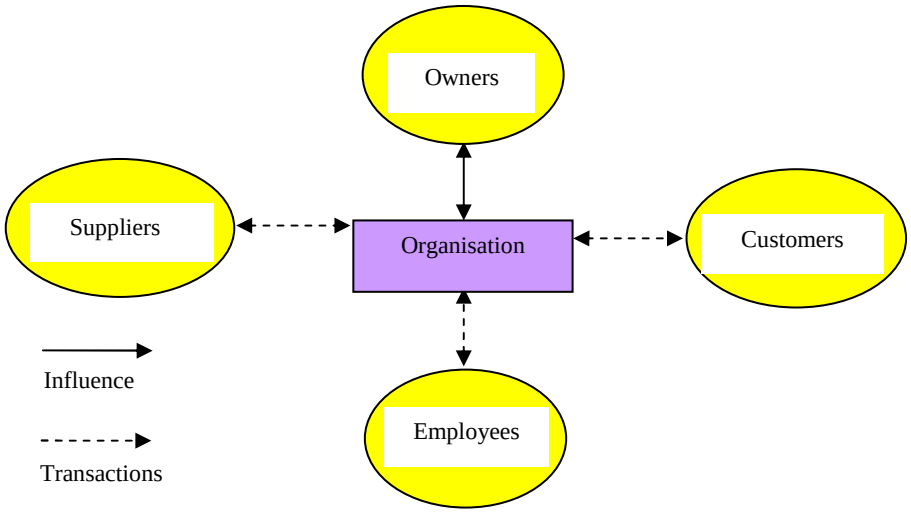
Danish businesses which carry on activities in Denmark and whose income is subject to VAT must register for VAT and pay VAT on their revenues. The VAT rate applicable in Denmark is 25%. Basically, all sales of goods and services are subject to VAT. Therefore, as services supplier, we have to register for VAT and we will receive a VAT number. The time of payment depends on the turnover of the business. Referring to our budgets we can state that the periodic VAT return will have to be filed quarterly, 40 days after the end of the period.
Concerning corporate taxation, companies become liable to pay tax as soon as they have been established. The first tax assessment of a new company must include all income earned throughout the first assessment period, irrespective of the duration of it.
As we said before, Danish companies are taxed at a rate of 28%. The income statement must include all income, whether it originates from Denmark or elsewhere. All expenses incurred during the year in order to earn, secure and maintain the income are fully deductible. However some expenses are not deductible at all, like start-up expenses, formation expenses and expansion expenses.
The income tax charge must be paid on a current basis as a provisional tax paid in advance in the relevant income year. The dates of payment are 1st March and 1st November. The final date for payment is the 20th of the month in which payment is due. The advance-payment-of-tax scheme is compulsory and the percentage of advance tax is 50% of the average income tax for the past three years. As we are a new company, we cannot make up advance tax on the basis of past income years and therefore we may elect a voluntary payment of advance tax before the 20th of November. The tax return must be filed not later than six months after the end of the income year.
Tax losses incurred in the income year 2002 or later may be carried forward infinitely, whereas tax losses incurred in 2001 or before may be carried forward in the for 5 years. Tax losses cannot be carried back to be set off against tax payments in previous years.

5. Mission and Goals

Our company's fundamental function viewed from a ownership's perspective would primarily be to maximize the company's expected yield of the future discounted present value (Net Present Value). Therefore our main goal is to maximize the profit in a short-term perspective, like the classic approach suggests.
Nevertheless we will refer also to some "new" theories which will supplement and not exclude the classical one because different theoretical perspectives tend to focus on different aspects of the company. These modern theories are called the Stockholder Model and the Stakeholder Model.

5.1 The Stockholder Model

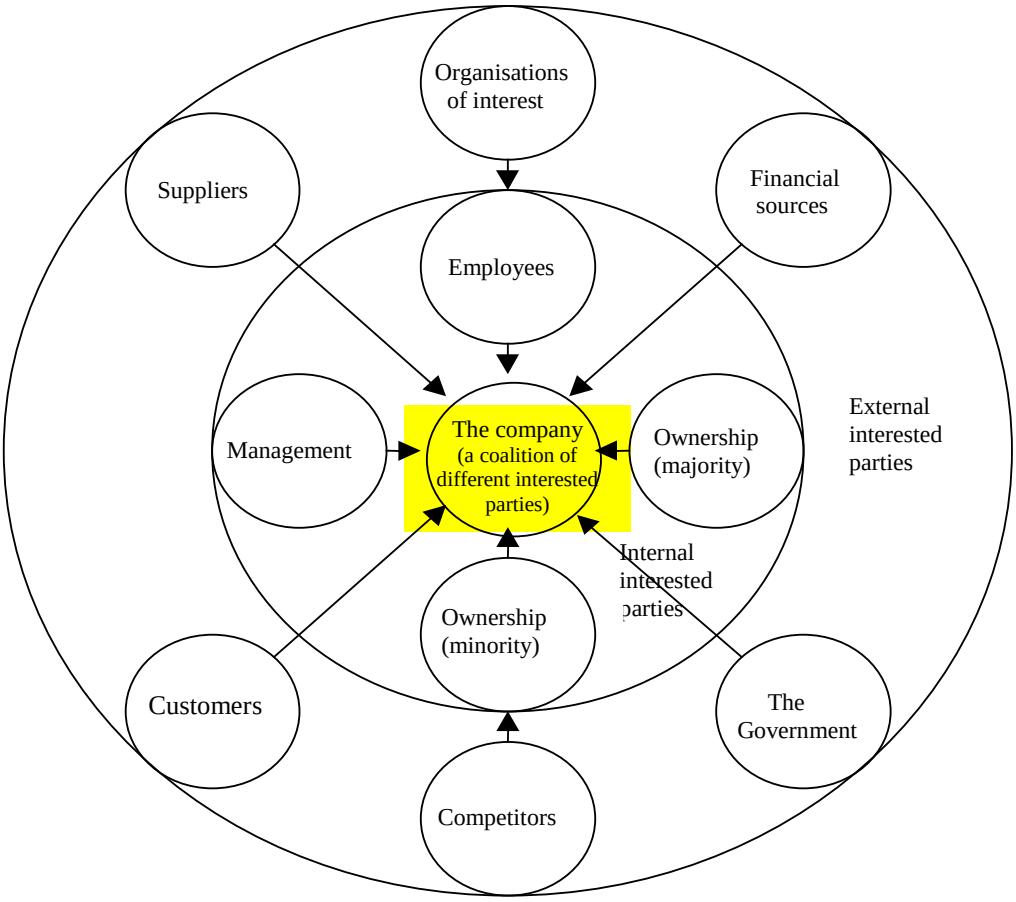
The classical interpretation of a company's management is that decisions are based solely on the interests of the owners. This will only happen when it is the owners (stockholders) who elect the board of directors, who afterward will decide the management (stakeholders).
Actually, as we are a start-up company and we are not a public company with a large capital entity shared among a large number of shareholders, at least for the first years we are not going to refer to this model as the main one.
Anyway our model for the next years, after a process of growth, should be that one represented in the following graph.



The other interested parties, stakeholders, such as customers, employees, and suppliers will not be given any major influence in the decision-making process. The management will not clarify which kind of relation it has to the interests of the stakeholders.

5.2 The Stakeholder Model

Under this perspective, we are going to interact with many internal and external interested parties. We will no longer be profit maximizing in a narrow sense but we will make a decision with the interest of maintaining good relationships with both the stakeholders and the outside world.
Therefore our profit maximizing process will be subjected to priorities and limitations. Profit maximization will only be reached by taking the company's interested parties into consideration. Our company will partly focus on the owners' desire to be profit-maximizing, while also paying attention to the goals and wishes of other interested parties.
The picture below shows, in details, the most important elements of this model.



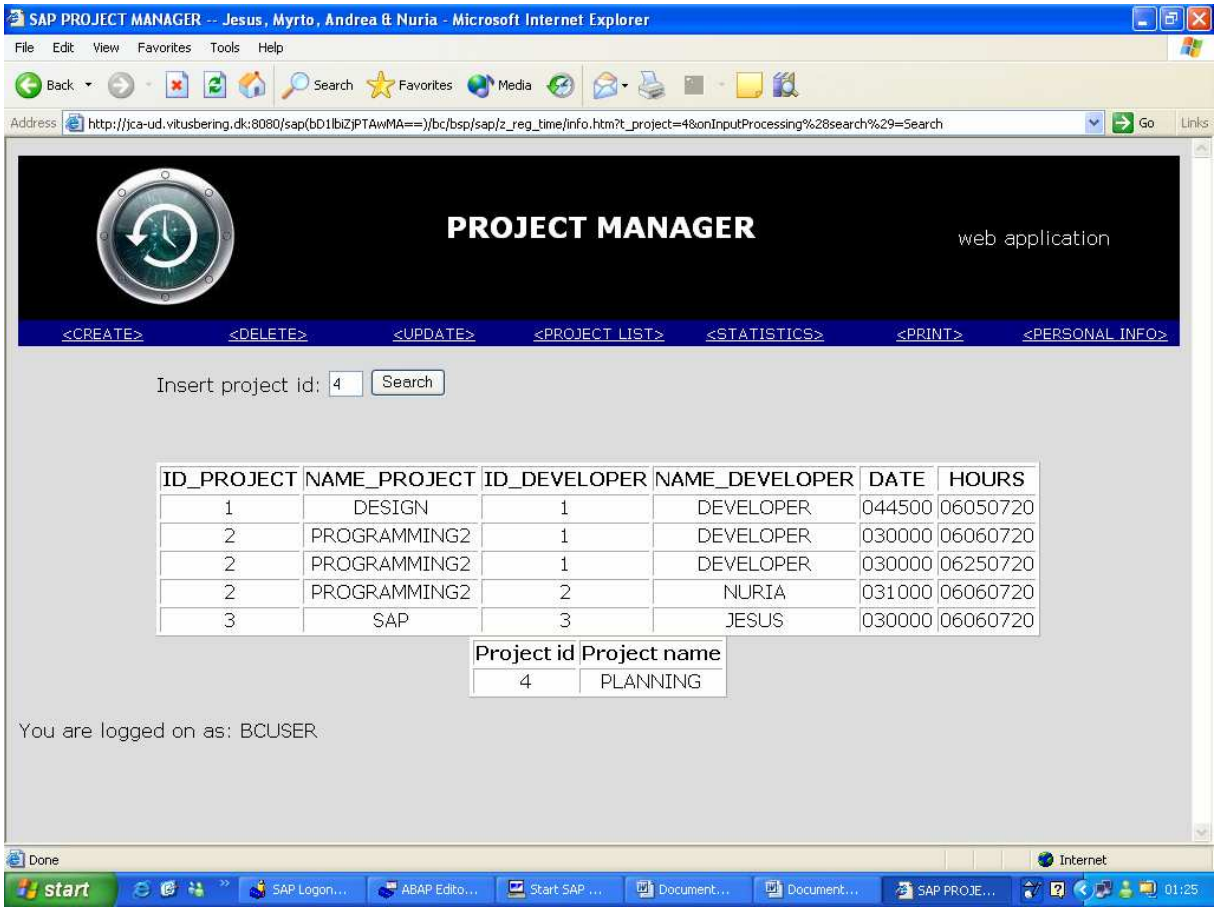
With this model, the internal interested parties will be defined as integrated parts of the company: management, employees and owners. The external interested parties will have an indirect interest in our company.
Considering all these reasons we think that this model, integrated with the classical one, should be the perfect one for our company as we believe that our goals have not to be focused only on the maximization of the profit and of the value but they have to strongly consider the relationships between all the stakeholders, in order to improve the quality of the relations, the quality of the exchanges and –most of all- to support the growth of the business.

6. Product Description

Developed Software Presentation

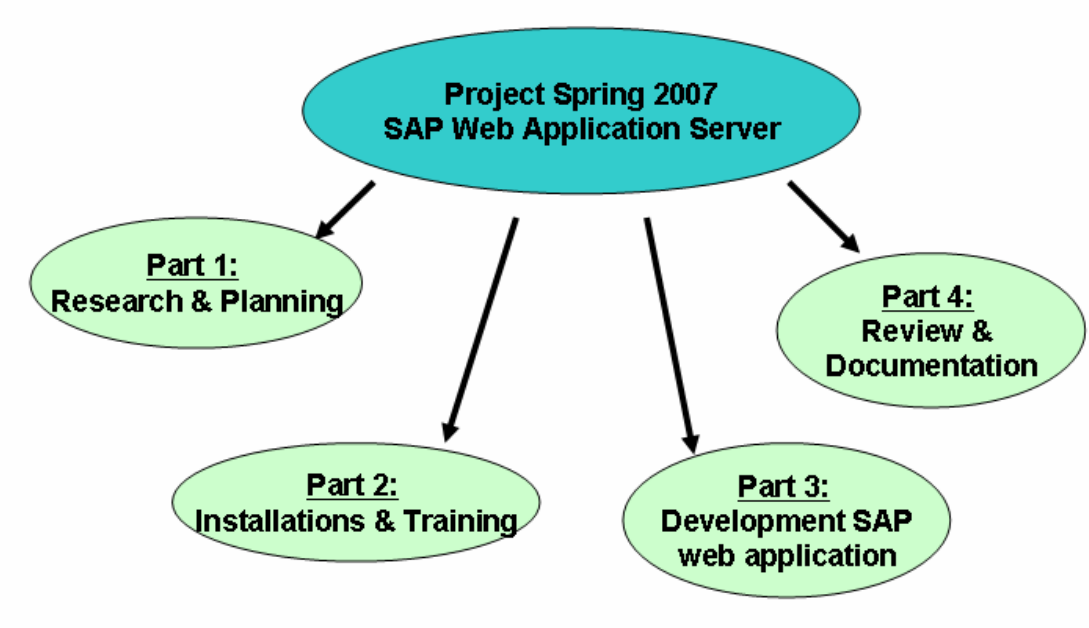
Nowadays when you establish one business, you have more and more competency so, if you aspire to be a big and powerful company you have to maximize your results and produce as much efficiently as you can. One very important point on these aspects is use the time in the best way.

Having all of these things in mind, we have decided to develop one software tool to manage the time that our workers use for one project. With it we will be able to control the hours spent on one project on one day, the total hours spent on this project, the projects that we are developing in one day... to be able to organize and analyze in the best way how and in what our workers are using their time.



System Description

Our big and global goal is develop a time manager application with access by internet, based in the SAP Web Application Server. For take this idea in an easier way we have tried to divide the total project in some smaller parts, in concrete 4 parts that we show in the next graphic:



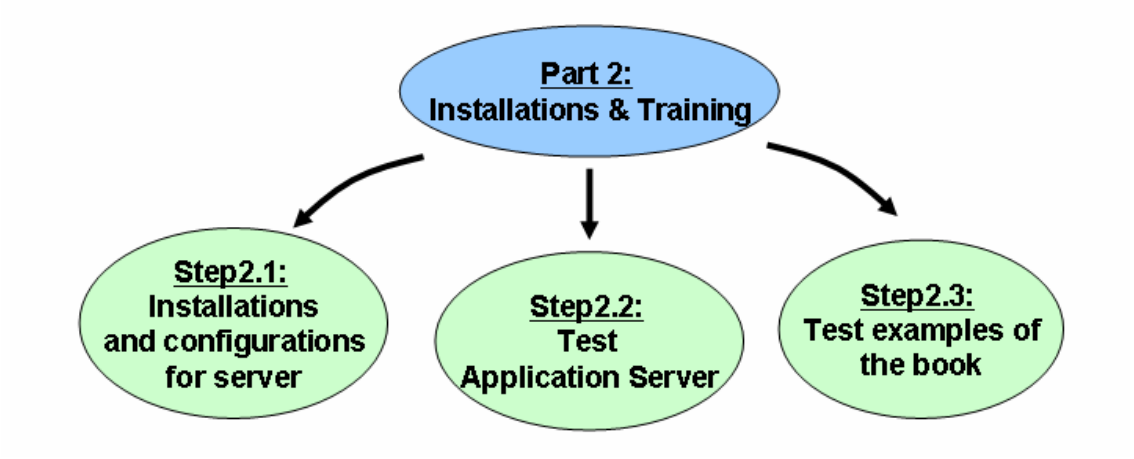
Part 1: Research and Planning

In this first part of the project, our work has consisted in design one concrete the idea of the product that we want to develop. With this, we have started look for all that we need to convert this idea in a reality. We have looked information about software that we should install, the knowledge that we need to use this software and develop our project, similar ideas that are already working to know how they work and look for the good and bad points of them to develop a better result.

With some of this information we have started to organize how the project is going to be developed, the main parts that we have, which of them it is supposed that are going to take more time and distribute them in the time that we have.

Part 2: Installations and Training

In this second part we have started with the practical part. It has consisted mainly of get everything ready to start to develop our final system. This means get ready our computer with all the installations that we have needed and our brain, get it ready to start to work in this kind of project, with these kinds of programs and their characteristics.



The point 2.1 has consisted in install all the software that we have needed and configure all of them. The software is composed by the SAP Web Application Server 6.20 and SAP DB. The process of installation is explained in the point 12.4.2 of the process report. Also the setting up of the SAP system can be found in the point 12.4.3 of the process report.

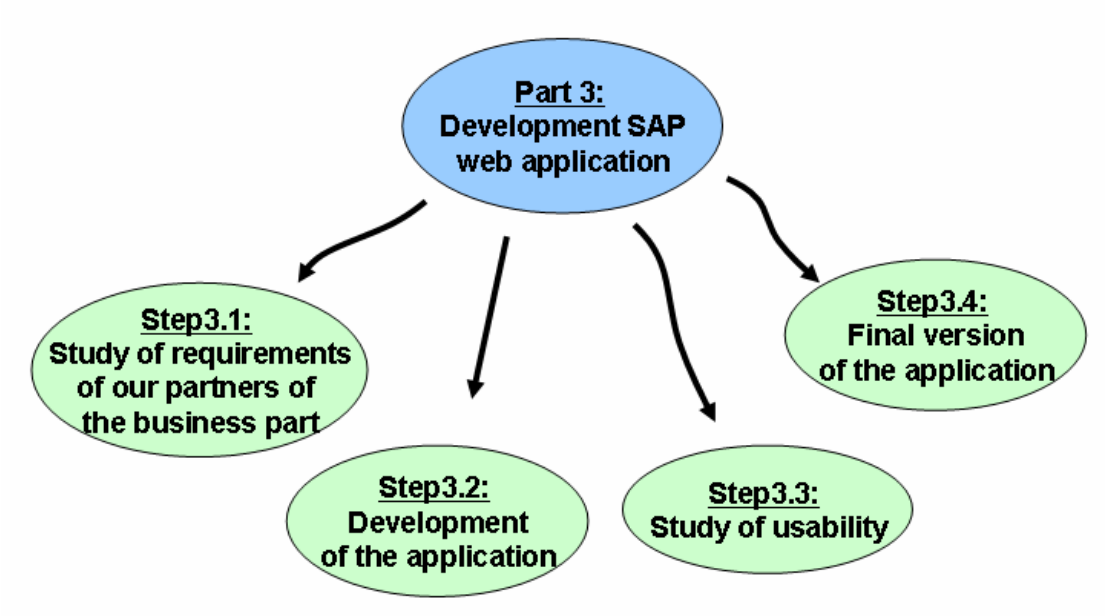
In the point 2.2 has been the part of test all these installed programs and tools, look at how they work, if they work correctly and start to study their main tools.

In the last point of this part, the step 2.3, we have started to work with the examples that we have found in the book of SAP Web AS and other examples that we have found on internet, get them working in our computer and try to understand them.

More concretely, we have been practicing to create some html pages and BSP applications for the web part of the system. We can find more detailed this step in the point 12.5 and 12.9 of the process report.

Part 3: Development of the Application

The third part has been the step of development of our real application.



Step 6.1 Study of requirements and Design

We have used the contextual design which is a methodology centered on the user that allows the designer to have a better understanding of the user environment and the requirements that the interactive system will have to fulfill.

And to follow all these points we will have always on mind Figure3 that told us that the user is the most important piece and he takes part during all the process of creation. We will start with the bases that he will provide us and in every moment he can modify or change the whole product. Please notice that, no matter when, it is possible to come back to the basic stages and start again.

Fonts: http://www.mpiua.net, material from Computer Science degree in the University of Lleida (notes of INIPO, Jesús Lorés) http://griho.udl.es/ipo/transpas.html, Wikipedia: http://en.wikipedia.org/wiki/User-centered_design.

6.1.1 Analysis of requirements

If we think in the classic Software Engineering way the analysis of requirements is where we find the services and the restrictions that the system should supply. We determine the requirements of the system and we say which kind of requirements are they. Usually we find:

- Functional, they describe the system functionality and,
- No functional, usually they are restrictions.

So if we add the classic software engineering way to our UCD we get the usual activities plus some of them related with the usability and the accessibility that will make a better final product.

And as we said before in all the theory above, the center is the user and here we deal with all the information related with the people information, their needs and with the requirements to satisfy them.

First of all we have to say that we have the idea of what do we have to implement. We need a web application to control the hours that the workers of one company have used for their projects.

If this application was really well designed and accessible for everyone we should have in mind that for example, children and elderly people need some special attention. However, as we have decided that we will sell this product to some companies or software developers, we will base the requirements on their needs and not on a really easy and colorful interface how it could be if it was appointed to children's use.

1.1 Ethnic analysis

An ethnic analysis is etymologically the study of ethnics and the way of live of different groups of people. To do that we use the observation and the description of everything that they do, think, etc. and how they change in different moments.

And this is not like taking a picture of some group of people is going further to understand their behavior.

With this we get a better idea of what they need and how can we offer them what they want.

We describe here our *ethnic analysis*. We will have prepared some kind of questions to have some kind of interview with possible users[1], but we will try to make an open interview to make it more fluent and get more information.

[1] We focused the interviews with possible users and not with all kind of people because we have a clear idea of who is going to use the application.

As we cannot spend lot of time making this kind of research we will reduce our range of ages. That is why will be centered in people from 16 to 65 years old (the years that people can work) and we will ask them about themselves and about what do they expect from the final application. Moreover, and as we said before, the people that we will choose will be a possible user. That means that they can be businessmen or they need to control the hours that they spend at work.

With all this we will try to get as much information as we can about the objectives of the application, the usability, the accessibility and finally about our competitors.

Here we add the main questions of the interview and a summary of what we got:

- Questions:

1. What is your name and what is your job?
2. How long have you been working in this field?
3. Do you use some kind of program for the project management? Do you like it?
4. What would you ask to a new application to offer you?

- Interviews:

- Marco Nobak (35 years old) – Slovenia

Marco is a business man that lives in a village next to the capital of Slovenia. He has been working as a project developer for 10 years and he is interested on all new kind of applications and tools to make his work easier. He has been trying some because his company decided to use some software, but he is not happy with the results that he got. And he suggested that it would be nice if the application would have a password for each developer to avoid problems.

He likes to surf on the net so he knows about computers and web applications. He thinks that it would not be difficult for him to start with a new application as long as it would be similar to the ones that he has used before.

- Óscar Monné (45 years) – Spain

He is a family man that has started to work by himself. Before that he had been working as a salesman and mechanic so he does not know much about computers. He does not know much about English either, because he studied French in school.
Now that he is his own boss he has to control how many hours has worked in a project to get the money from the company that requested his work. But he does not feel comfortable with these new programs that are really complex. He would like to have an easy tool to write the hours and the days that he worked.
He asked also if the program would be able to print the hours to have some kind of bill to give to the company.

- Antonia Tourkoglou (21 years) - Greece

Antonia finished last year her economic degree and she had a contract with a company. She is not the supervisor of any project but she would like to and she hopes she will be some day.
She has studied about SAP at school and she says that she would not have any problem to use a web application because she has been working with computers since she was a teenager. Even more, she speaks very good English and she asked if the application would be colorful and good looking as she is a bit in fashion.

After this interviews we know that we need a simple application, intuitive for those who do not know much about English (if we have just an English version in the beginning), and easy to use. It should have an attractive design and it should have some specific tools like printing.
Concluding it could be some interface similar to the "Windows" one because we all know more or less how to use it (we recognize the icons and tools), but with more elegant and organized design.

1.2 Objectives of the application

After all the information we got from the information and the things that we already decided with our supervisor the application will have a main objective:

- To give the user the opportunity to manage the hours that he has spent in one or various projects.

Subsequent to that we find some more objectives:

- Have a reliable web application with one of the most important software company in Europe as is SAP and offer a good guarantee to the users.
- Create a new competitive SAP application that can be easy introduced to the market, improving the ones that already exist by simplifying the work and the delay time.
- Make a usable, accessible and secure application so that it can be used for most of the population.
- Have a really simple and fast tool but with some specific tools like showing statistics or printing.
- Create an interface with a similar look to the programs that everybody or most of them have used but more focused (not a lot of tools that no one knows) and elegant.

1.3 Objectives of the Usability

Summing up what we were saying before about usability the main points were to ensure that the interactive products would be easy to learn, effective and comfortable for users.

So we could say that some of the objectives that we want to achieve with this product are:

- Easy to learn. Our product has to be similar to the programs that people are using everyday. With this we also have a familiar, predictable, and with a low cognitive work program that will help the user to finish his work faster.
- Low rates of delay. Using *SAP ABAP* as the programming language for the application we want to reach a low rate of delay when we are trying to get to the database and have

some security in our private information. Furthermore, we will have good technical support if any problem occurs.

1.4 Objectives of the Accessibility

Before with the interviews we got some useful information related with the usability of the application.
One of the interviewed assumed that had slightly problems with English language. With this we can say that one of the main points of usability here is to find the way that people could use the program if they cannot speak English[2].

Having these lines above as an example we can give a small list of which are the objectives of the usability for this web application:

- The program should have "*Windows*" icons look alike so that people who cannot read or understand English can use the application.
- It must be clear. Without lot of useless tools that confuse the user and makes him waste time when he cannot find the tool that he needs to finish his work.
- It has to be well distributed, organized in sections so that they can find things easily.
- We have to be careful choosing the colors of the application so we have to thing that there are a lot of color-blind people, especially with red and green.
- And it has to be possible to go through the application without mouse if it happens that we cannot use this device (then it has to be possible to use the keyboard).

1.5 Competitors analysis

As is it defined in the English dictionary[3]:

"Competitor is a person, team, company, etc., that competes; rival."

So here we are supposed to analyze some of the similar programs that are actually on the net and some companies or users may be using. But as we also have a part of the project focused on this subject we will just describe how we were going to do it.

To do it we would use three different ways. First we would check the examples of web application that are given in the *Wikipedia* (search for *aplicacion_web*), then we would have a look in the *Softonic*[4] website and we would search for some more examples using *Google*.

http://en.wikipedia.org/wiki/Project_Management
http://es.wikipedia.org/wiki/Aplicacion_web

[2] We cannot assure that we will have the option to choose language from the beginning. Maybe it could be something to improve on the second version of the application.
[3] http://dictionary.reference.com/browse/competitor
[4] http://softonic.com

6.1.2 Making a paper prototype

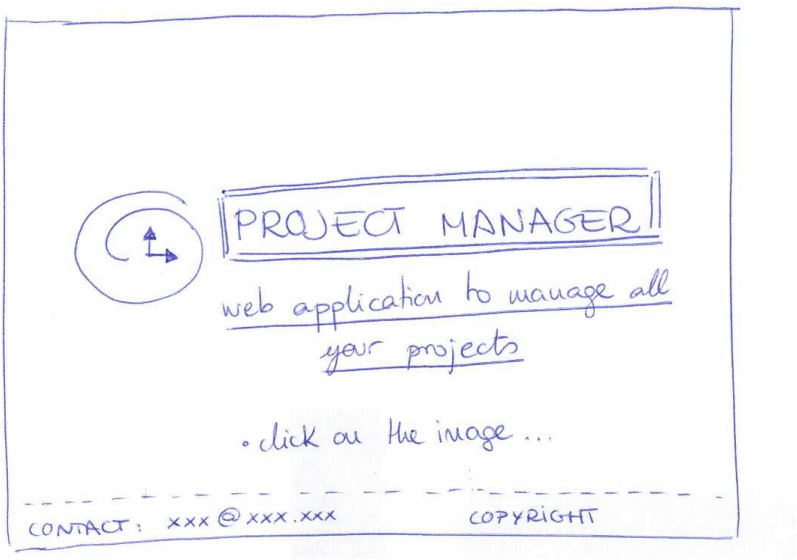
Paper prototype as the same word says is a prototype of the final application made of paper. So it will be a sketch of the product with the most representative attributes to make an idea of how it will work.

To create the prototype we will use the simplest tools that we can get: pen and paper. And with this we want to get an overview of the application without so many details but with all the final functionalities. Like this users will be able to test and check if the product is being created according to what they requested.

Finally we can say that we use this paper prototype because it is cheaper and the changes can be done easily. Also it is better for the users to interact with it if they are not used to use computers.

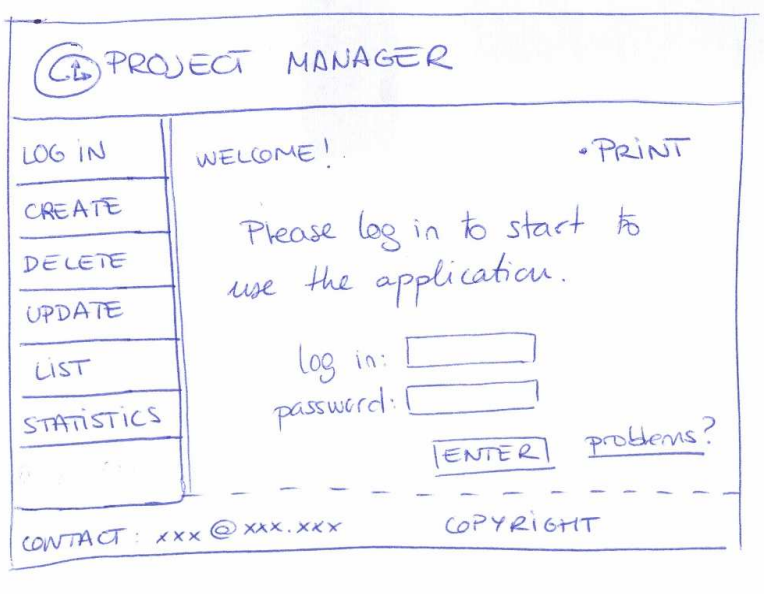
As a result we attach some of the drawings that we did with their explanation:

- First idea:



Here we have a simple welcome page with the title, the logo and a little description.
Therefore, there will be the footer[5] with contact mail and about/copyright information.

[5] Fragment of the web page with some simple information situated below and repeated in each page.

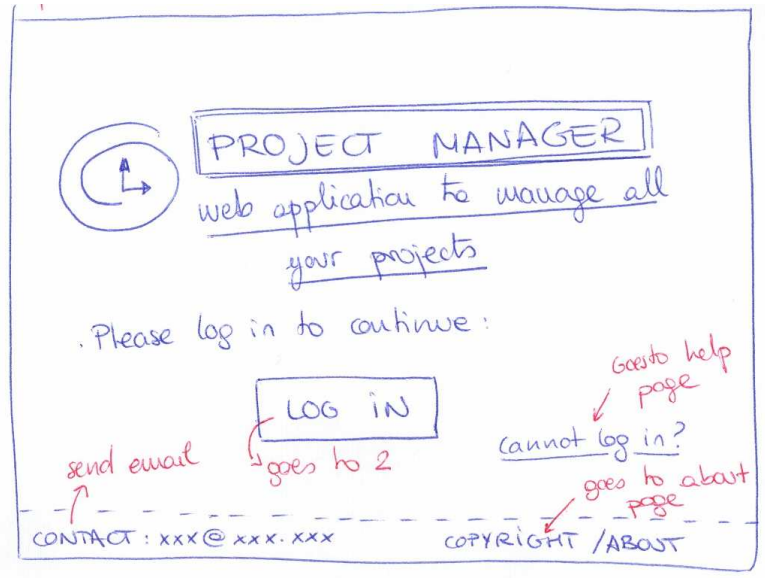


This is the main page. Divided in four parts or fragments:

- Header with the welcome page information. (Maybe also a clock.)
- Navigation frame, situated on the left as many of the WebPages.
- Footer as in the welcome page.
- Main frame with information about the application and how to start.

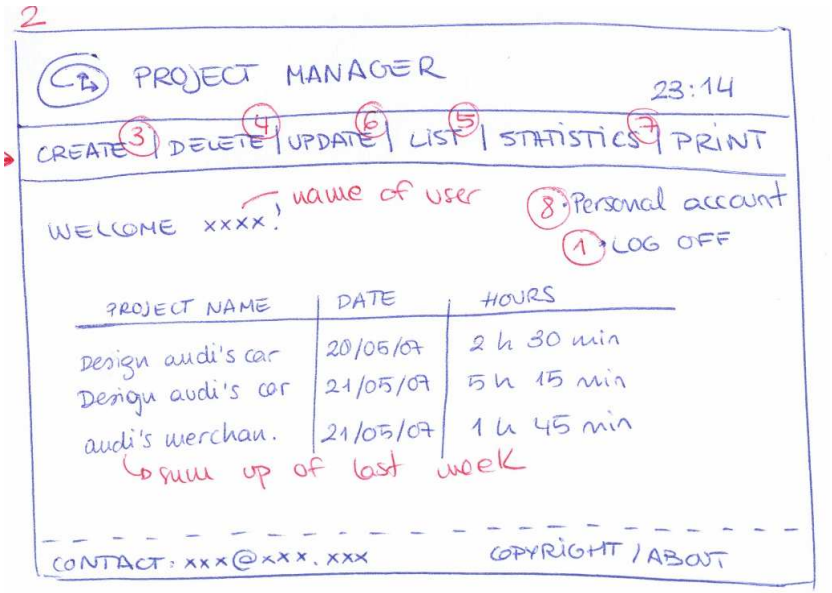
To start the application the user has to log in with the option on the right menu. He will have to click on log off to go out of the application.

- Second idea:



Now we have a welcome page with all the previous information but to continue to the main page the user has to log in.

With this we have one screen less (the main frame from before with information about the application that was useless). And when they are logged in and they go to the main page they can start working directly.
Here there is also a button that links with the IT service mail in case there is a problem with the log in (i.e. forgotten password).
Finally the footer is the same again.



Here we have again the main page of the application. It is again divided in four frames but now they are distributed on a different way.

- Header, as before.
- Navigation frame. Now situated under the header not on the right. Like this the interface is more similar to the “Windows” one and we gain more space if we have to display long tables with information about the projects.
- The main frame would now contain some information about the user (we already logged in before) something like the last updated information, or user’s personal information.
- Again the footer is the same.

As it may be not clear enough in the pictures we add here a list with the menu on the navigation fragment:

- Log in / Log off,
- Create a new project,
- Delete an old project,
- Update project,
- View project statistics,
- View list of projects,
- View/Update user’s personal information,
- Print,
- About the product.

6.1.3 Making the navigation map of the paper prototype

The task analysis is a method to analyze the way how people do their work. The things that they do, how they react and the things that they need to know.[6]

Inside the task analysis we find the navigation map, which is the analysis of how a task is accomplished, including a detailed description of both manual and mental activities. The main goal is divided in small activities or subtasks and each of them is described with element durations, requirements, and so on.

Find attached under these lines a small schema of some of the different methods that are used in the task analysis. Below we will describe two of them:

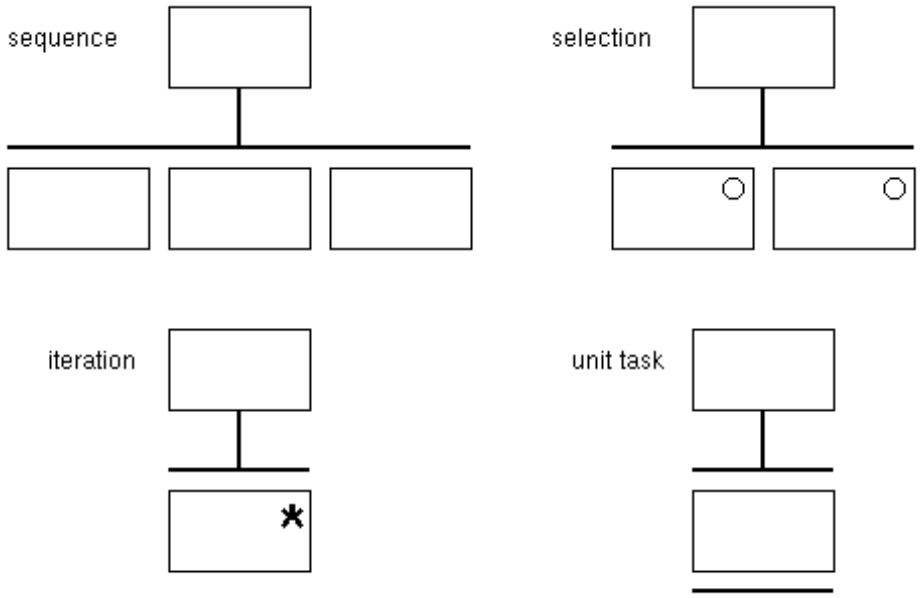
Method	Type	Notation	Specification	Commentaries
HTA	Cognitive	Graphic	Semi-informal	Decomposition model.
GOMS	Cognitive	Textual	Semi-informal	Describing the model with languages.
UAN	Cognitive	Graphic	Semi-informal	Direct manipulation notation.
KLM	Predictive	Textual	Time	Measurement of the human performance.
TAG	Predictive	Textual	Schemas	Consistence measurement.
CTT	Descriptive	Graphic	Temporal logic	Tools to support the analysis and the correction.

Connected to our project, here we want to divide different actions in small pieces and connect them to have the whole vision of the application. We want to study which are the steps that the user should do to use some tool or do some action.

To do that we have used:

- *Task division (Hierarchical Task Network (HTN))*
    - To see how one task can be divided in smaller ones. It is hierarchical because it is like a tree where the main goal is the highest square and all the sub-steps are under it.

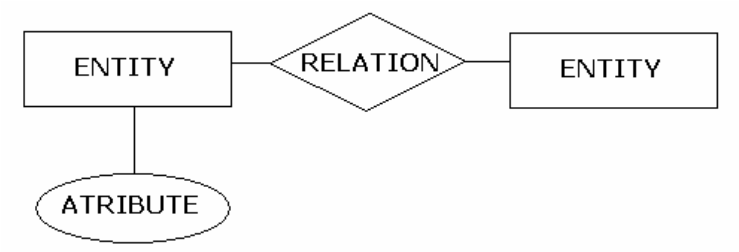
[6] DIX A. *Human computer interaction*. Prentice Hall, Englewood Cliffs, NJ, 1993



This figure shows the symbols used to do this navigation map. Another way to create an HTN diagram could be writing the steps as if it was a numbered index.

- *Knowledge based analysis (GOMS)*
  - Identifies the knowledge of the user to do one task, and analyses how the knowledge is organized.

- *ER-diagrams*
  - It is more oriented to objects where the actors and objects are described with the relations and the actions that they can have.



This figure shows some of the simplest symbols used in the ER-diagrams.

As we have to create a database for the application we will use the ER-Diagrams (Figure6) to represent the navigation map and even more we will do a simple Hierarchical task network (Figure5).

- *Hierarchical task network:*

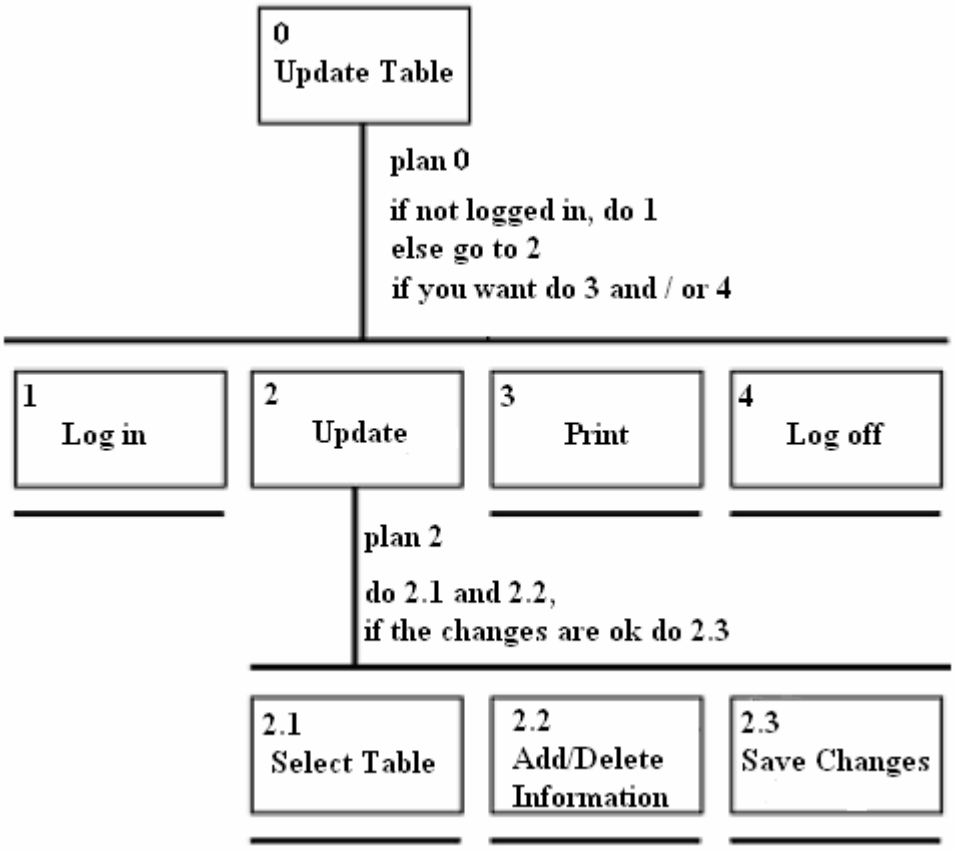


Figure5. It shows the steps to update a table with our web application (paper prototype).Under the lines, there is the schema with text for the same graphic of Figure5.

0. Update table
    1. If you are not, log in.
    2. Update table.
        2.1. Select Table.
        2.2. Add/Delete information.
        2.3. Save changes.
    3. Print.
    4. Log off.

Plan0: if not logged in, do 1,
else go directly to 2,
if you want do 3 and 4.

Plan2: do 2.1 with the button “List”,
do 2.2 (add or delete),
if the changes are ok, do 2.3.

- *ER-Diagram:*

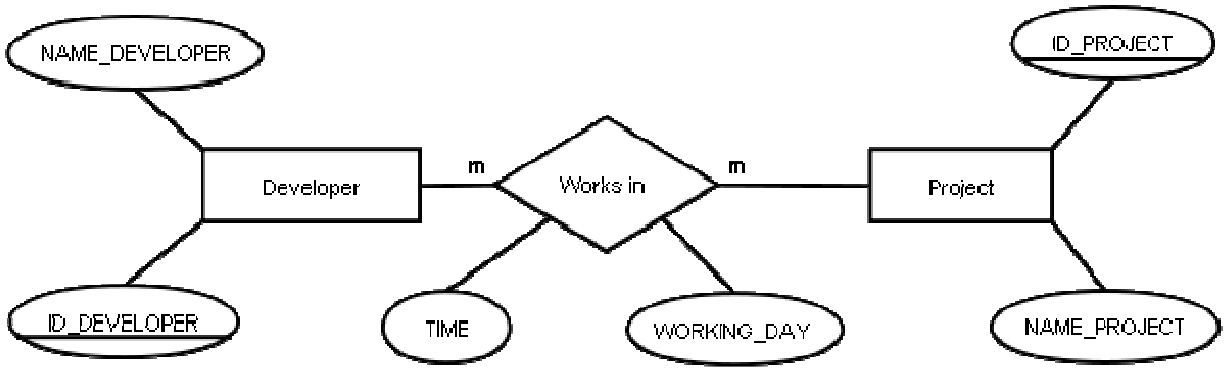


Figure6. ER-Diagram for our database.

6.1.4 Focus group evaluation

Focus group is a technique used to gather information. It is a meeting from six to nine users to discuss about the system. There is also a Human Resources Engineer as a moderator. He has to prepare a list with the points to deal with and recollect all the information from the users. This method helps the designers to capture different reactions and ideas about the product[7]. And you can get impressions about their attitude towards a product, service, concept, advertisement, idea, or packaging.

- *Procedure:*

1. Find between 6 and 9 representative users that want to participate.
2. Choose a moderator.
3. Prepare a list of things to be discussed and set the goals of the meeting.
4. Control the meeting but keeping in mind that it should be fluid and free speaking.
5. Ensure that all participants take part on the discussion.
6. Try to avoid that one user is talking all the time.
7. Make a free meeting but trying to follow the main points.
8. Write a sum up about their opinions.

Finally we have to say that the data that we get after the focus group are not very reliable and they are difficult to analyze. However, we will write down what we got from this experience.

Remember that it is difficult for us to find users that are inside the range that we wanted and we do not have time and experience to do a good *on-line focus group*[8]. Consequently we decided to have a *mini focus group* (with fewer participants) and all of them will be students of *Vitus Bering College* from different fields of study.

[7] NIELSEN J. *Usability Engineering.* Academic Press, Pages. 195-198, 1993
[8] Computers and networks are used.

- *Focus group result:*

- Moderator's list of main points to deal with:

1. Get the first impression of the people.
2. See if they feel comfortable with the interface.
3. Check if they can make some small action (update, create…)
4. Make a list with improvements and questions.

- Sum up:

We succeed to gather 4 people and a moderator for the focus group. We went to a room and we put the paper prototype on the table. The first reactions were a bit confused because the paper prototype was a bit messy. After explaining them what the application was they started looking to the functions. One of them said that the distribution was like a web page and it was more or less easy to follow the links and use the tools. Another one suggested changing some of the menu options because it was not clear enough.
For example the option "*update*" should be after knowing which project you want to update, so it is a bit silly to have a button that goes to the same place than the other as we have now. They found also some difficulties to go to the main page and to navigate. But afterwards they suggested us that if we used colors of buttons to differentiate the options it would be easier.
More over, they said it was a nice idea. They said it was a bit simple but it was ok to be the starting point, because they would like to have more options like to have the status of the project (maybe it will become an option) and a nice search method and total hours calculator.

6.1.5 Creating a future scenario

According to the *Forecasting Dictionary*[9], a scenario is "a story about what happened in the future". In UCD is a description of how the product that is being designed can be used in a typical future scene.

The scenario has different elements:

- ***Setting***. We need to know where we are, who is the actor are and what he is doing.
- ***Actors***. All people who will interact in this scene must be described.

Find now, the future scenario we have created:

A businessman, medium age, is going to work. He has to bring with himself a handbag full of papers and notes about the project, some of them (maybe written in an agenda) about how many hours has he been working.

[9] http://www.forecastingprinciples.com/

He arrives in his office or place of work and starts ordering all his papers. Then he goes to work with his project, maybe interacting with more actors, and when he finishes he goes to the office again and writes the worked hours in a paper.

With this method the information is easy to loose, it is difficult to control and the actor wastes a loot of time with all the papers.

With the web application we are creating, the man should not bring all the papers about the hours he has worked. He just needs to have a computer (could it be his or from the company he works for) and write the information there. Or even if he does not have computer where he is working, he can use a piece of paper and write it afterwards.

Like this he has all the information together, easy to find and work with (statistics, changes, updates…), and you can still print it to have in paper.

6.1.6 Design

If we would define design we could say that is: "to prepare the preliminary sketch or the plans for (a work to be executed), esp. to plan the form and structure of: to design a new bridge. To plan and fashion artistically or skillfully."[10]

As we said before our design is centered in the user and therefore we will follow the next schema (showed before):

Task analysis

This point has been analyzed before when we were making the navigation map for the application so now we will just write the tasks or tools that the user can do with it.

First we had this list, taken from the paper prototype:

- Log in / Log off,
- Create a new project,
- Delete an old project,
- Update project,
- View project statistics,
- View list of projects,
- View/Update user's personal information,
- Print,
- About the product.

Now, after doing the focus group evaluation and checking how much time we have to implement the application we find out this reduced list:

[10] http://dictionary.reference.com/browse/design

- Log in/off,
- Create a new project,
- Delete and old project,
- Update project,
- View list of projects,
- About the creators.

Choosing the colors for the interface

One important aspect when we are designing the interface is to decide which colors we will use. And it is significant because there are a lot of color-blind people that can be using our interface and can be confused with the colors like seeing red when it is green.

Find attached then, some points to have in mind when we are designing an application with colors:

In general
1. Choose compatible color combinations. Avoid red-green, yellow-blue, green-blue and red-blue.
2. Use high contrast between the words and the background.
3. Restrict the number of colors to 4 for the beginners and 7 for the experts.
4. Use only light blue for the background areas.
5. Use white for the periphery information.
6. Add shapes to the colors because the 6 to 10 per cent of men have some problem with the vision of colors.

For the screen and the data visualization
1. The luminosity lows down in this order: with, yellow, light blue, green, magenta, red and blue.
2. Use white, light blue or green on dark backgrounds.
3. For inverted videos use black, red, blue or magenta.
4. Avoid very saturated colors.

After this and having a look in: http://colorlab.wickline.org/colorblind/colorlab/ we have decided that de background should be white or light grey to make it easier for the reader to get the information for the screen (even if the consume of the screen is higher) and the tables or menus could be displayed in some blue. And what is more, with this we also have the color combination of SAP programs.

Presentation and definition of the design

The presentation and definition of the design is also very important to make feel the user comfortable with the application and make things easier.
After the focus group we knew that we had to change some things that we had on the first ideas, so now our webpage is divided horizontally in 5 frames.

Like this we have:

- On the top the logo and the name of the product,
- Under this fragment, we can find the navigation menu,
- Then comes some information about the projects (tables…),
- Then some search space,
- And finally the footer with information about contact email.

Icons

If we finally use icons for the application, we will use some free images from: *Nuvola*[11] (http://commons.wikimedia.org)

Logo

Even it could be not really related with the HCI field, as we are designing we have to say something about the logo.

Logo is an image which people can recognize easy and relate it to a company.

Here you have a list of some basic rules to design a good logo:

1. It has to describe the company or product.
2. Easy to remember.
3. It should not matter if it is color or black and white.
4. It should be possible recognize if we reduce the size of the image.
5. It should not be similar to any other logo.

Like this we have:

- On the top the logo and the name of the product,
- Under this fragment, we can find the navigation menu,
- Then comes some information about the projects (tables…)
- Then some search space,
- And finally the footer with information about contact email.

Which standards will we use? ISO, style and corporative

The International Organization for Standardization (ISO) is an international standard-setting body composed of representatives from various national standards bodies. Founded on 23 February 1947, the organization produces world-wide industrial and commercial standards.

After this short description we can say that we will follow the ISO/TS 16071, "Ergonomics of human-system interaction – Guidance on accessibility for human-computer interface", released on

[11] http://commons.wikimedia.org/wiki/Nuvola

June 2003 and the ISO/DIS 9241-151 “Ergonomics of human-system interaction -- Part 151: Guidance on World Wide Web user interfaces”.

Moreover, we will take a look to W3C that has the WAI guide, Web Accessibility Initiative, to improve the designs and functions of the webpage.

Finally more ISO that we are related with our work:

- **ISO 10075** Ergonomic principles related to mental work-load
- **ISO TR 18529** Human-centered lifecycle process descriptions
- **ISO/IEC 14598** Software product evaluation
- **ISO 13407** Human-centered design processes for interactive systems
- **ISO/IEC 15910** Software user documentation process
- **ISO/IEC 14754** Common gestures for Text Editing with Pen-Based Systems
- **ISO 13406** Ergonomic requirements for work with visual displays based on flat panels
- **ISO 11064** Ergonomic design of control centers
- **ISO/IEC 11581** Icon symbols and functions
- **ISO/IEC 10741** Dialogue interaction
- **ISO/IEC 9126** Product quality (Quality in use metrics)

http://www.ergoweb.com/news/detail.cfm?id=757
http://www.iso.ch/iso/en/ISOOnline.frontpage

Accessibility study for disabled people

As we said before during all the design description we will try to use some icons to make the navigation easier for those who cannot read and we will try to choose carefully the colors so that color-blind people could have the fewest possible problems.
More over, the design of the web will be accessible with the keyboard and one hand and all the pictures will have a description if somebody uses a navigator helper to use the application.

Internationalization

In the beginning our web will be just in English because is the most spoken language over the world and even more if we are talking about internet. We know that this is not very accessible but we are having in mind to add the possibility to the user to choose the language of the application.
Furthermore, the application will not be made with specific wide tables and buttons, so that if the product is translated all the word will have space enough.
And finally we will not use conflictive icons or images that can be misunderstood in some cultures or countries.

Step 6.2 Development of the application

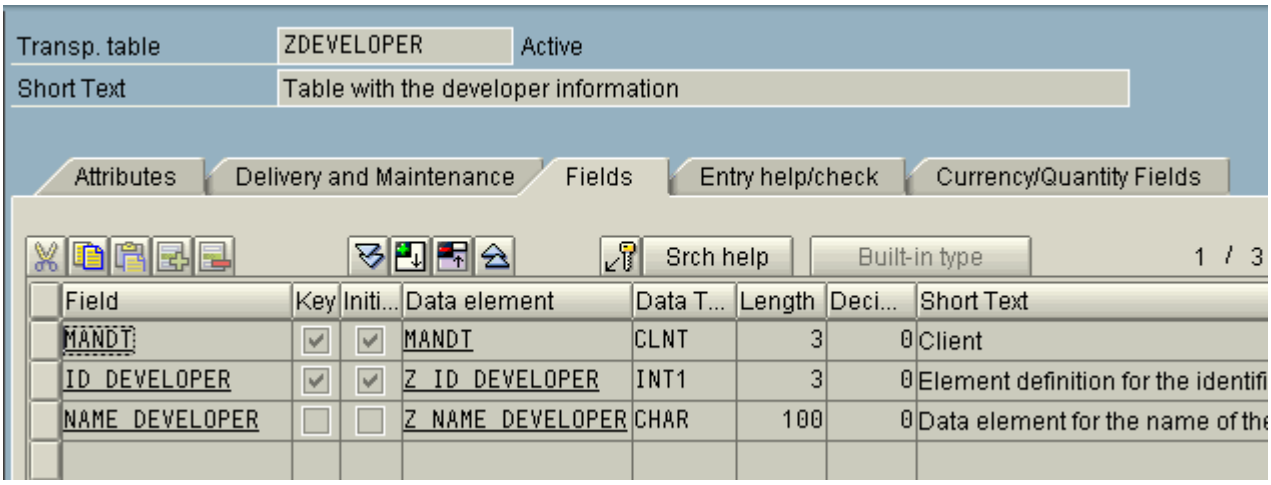
In this part of the development of the application we show the product that we have developed. We show it with some screens of the main parts of the program. If you are interested in check the code, you can find it in the appendix.

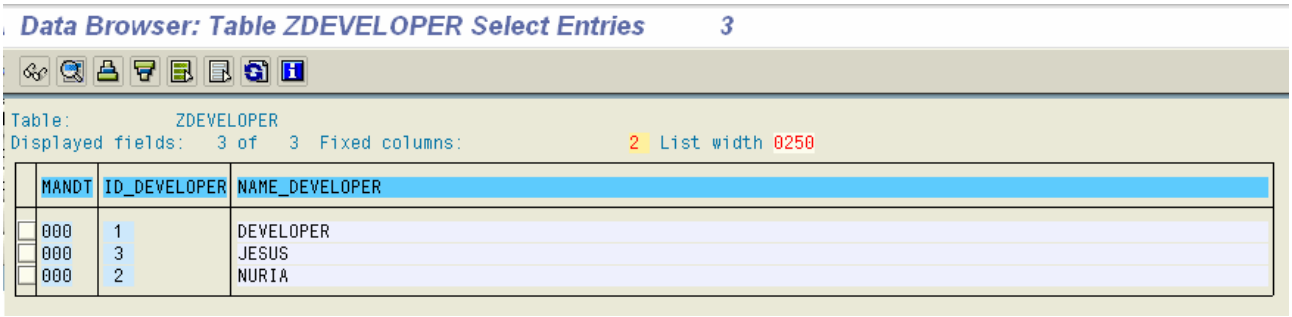
Our system is composed by 3 main parts: the databases, the sap system and the web application.

Databases:

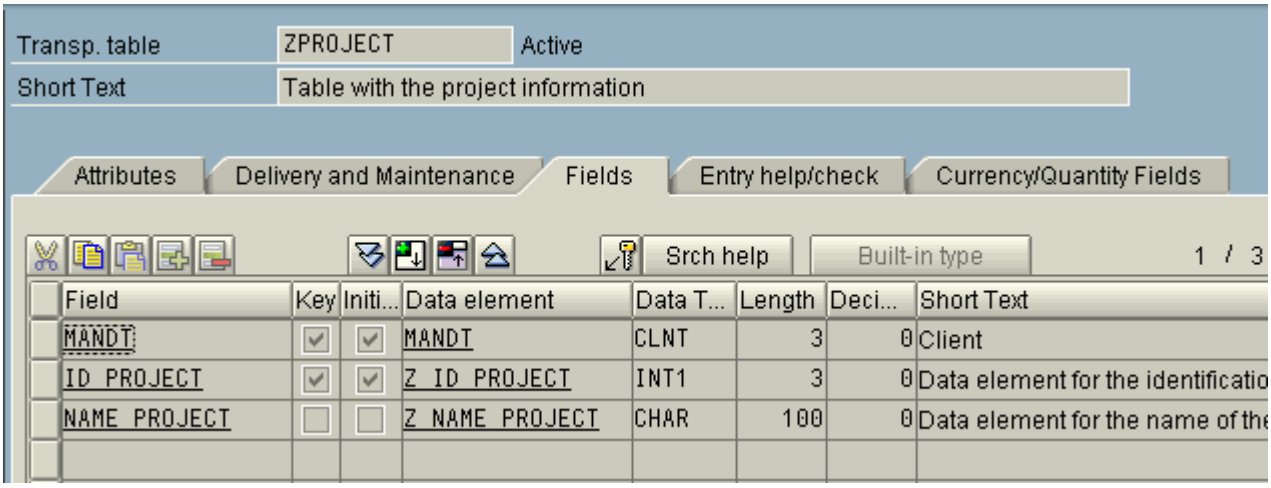
We have done the following 3 databases:

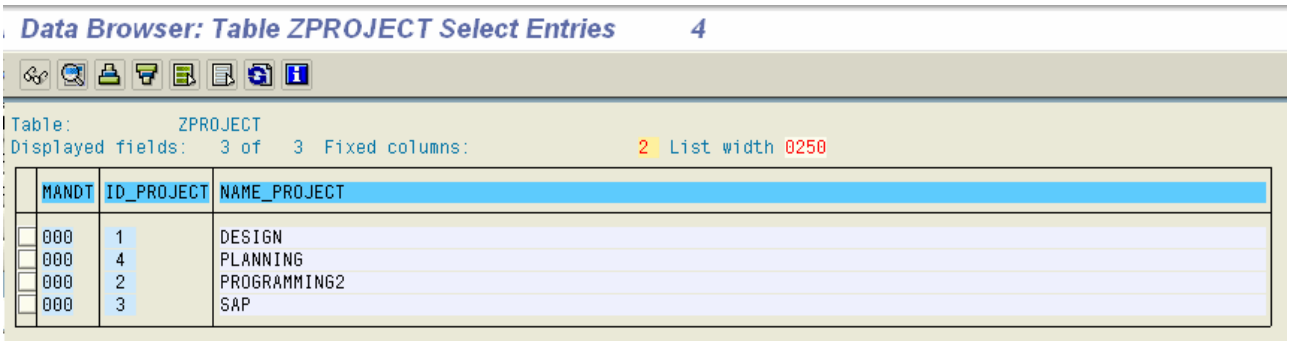
- ZDEVELOPER database.
It is where we have stored all the information of the developers of our system. The fields that we have introduced are ID_DEVELOPER as primary key and NAME_DEVELOPER. We show now the screen with our table and in the next screen the table after introduce on it some data:





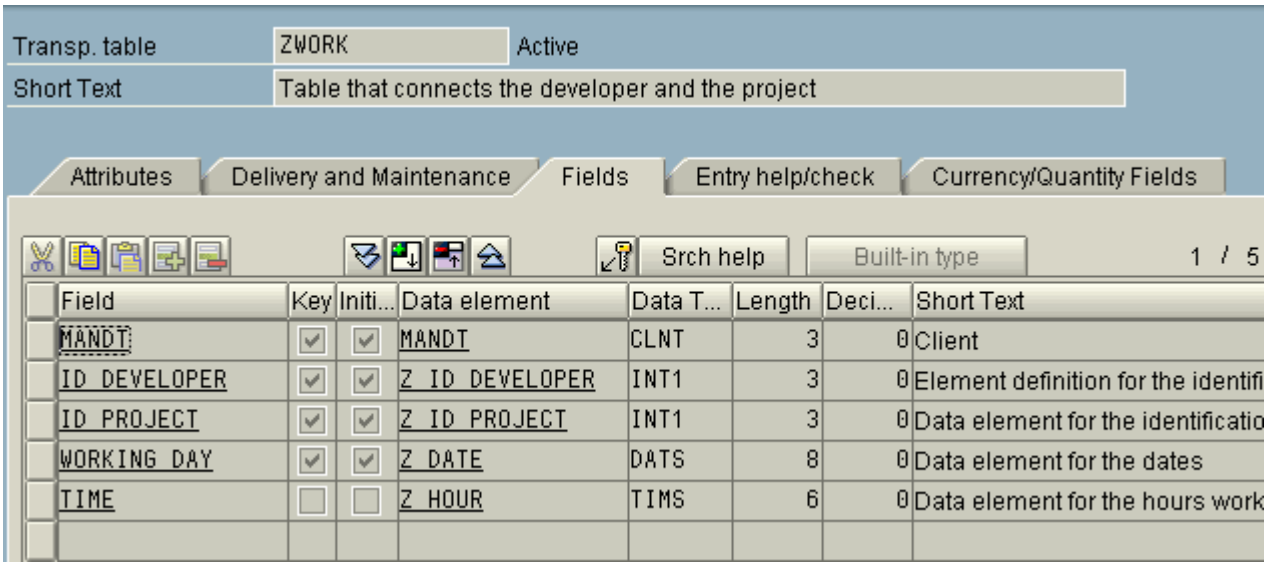
- ZPROJECT database.
It is where we have stored all the information of the projects of our system. The fields that we have introduced are ID_PROJECT as primary key and NAME_PROJECT. We show also the screen of the table and the table after introduce on it some data:

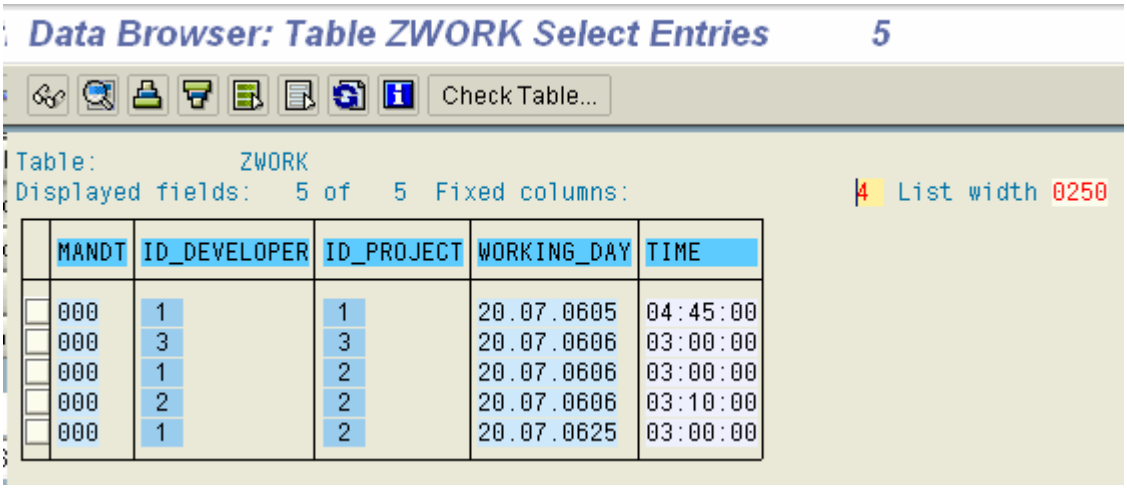




- ZWORK database.

This is the database that we have used to get the relation between the developers and the projects. We have as primary keys the fields of ID_DEVELOPER and ID_PROJECT, which are foreign keys of the previous databases. We have as fields of the table WORKING DAY that shows the date when one developer is working in one project and the time which shows the hours that one developer has been working in one project.



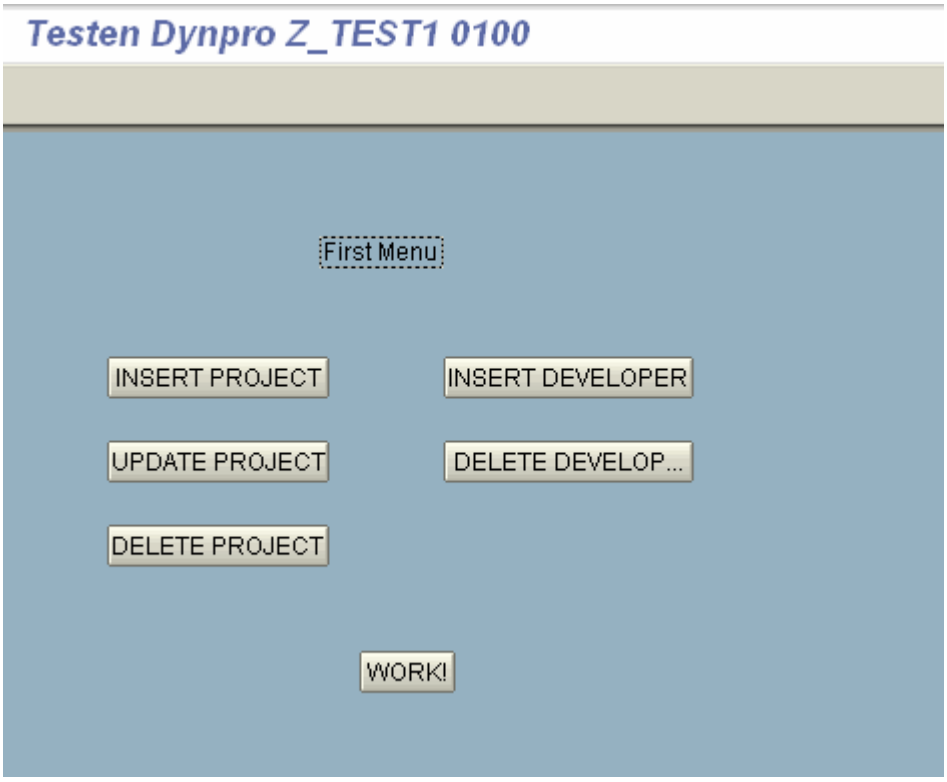


SAP System:

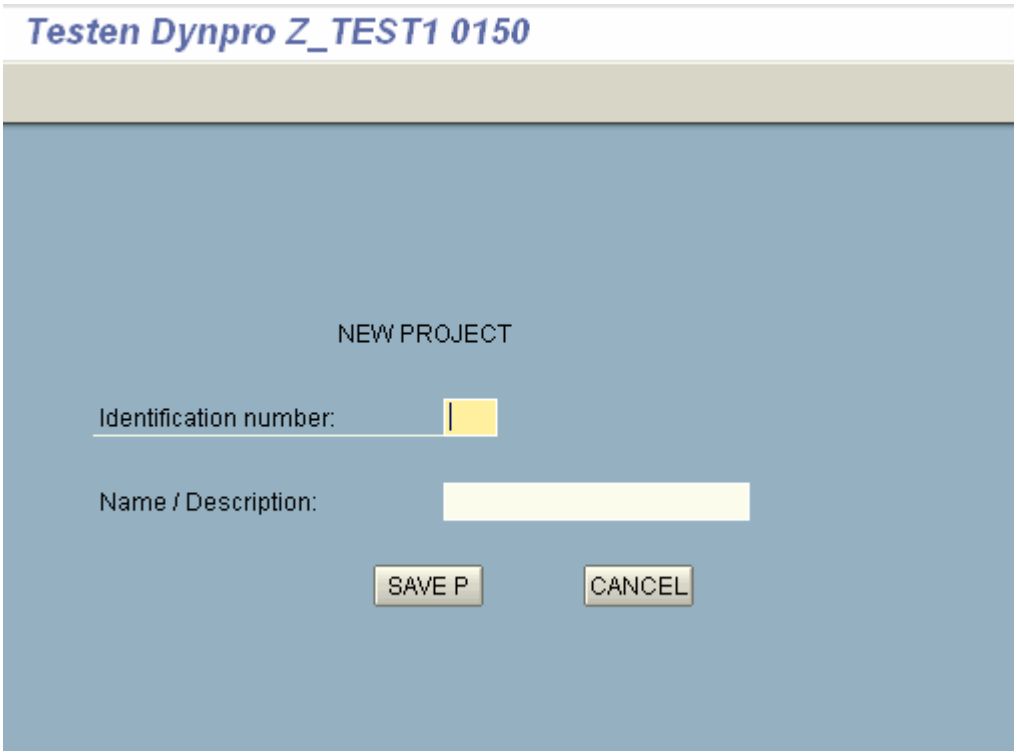
We have created the SAP system where we have created the code to fill the databases, create the functions to introduce and delete data, the screens to be able to do this, the class to be able to change this data and the code to control the web part.

Now we show the images of the screens of our SAP interface explanin their utilities.

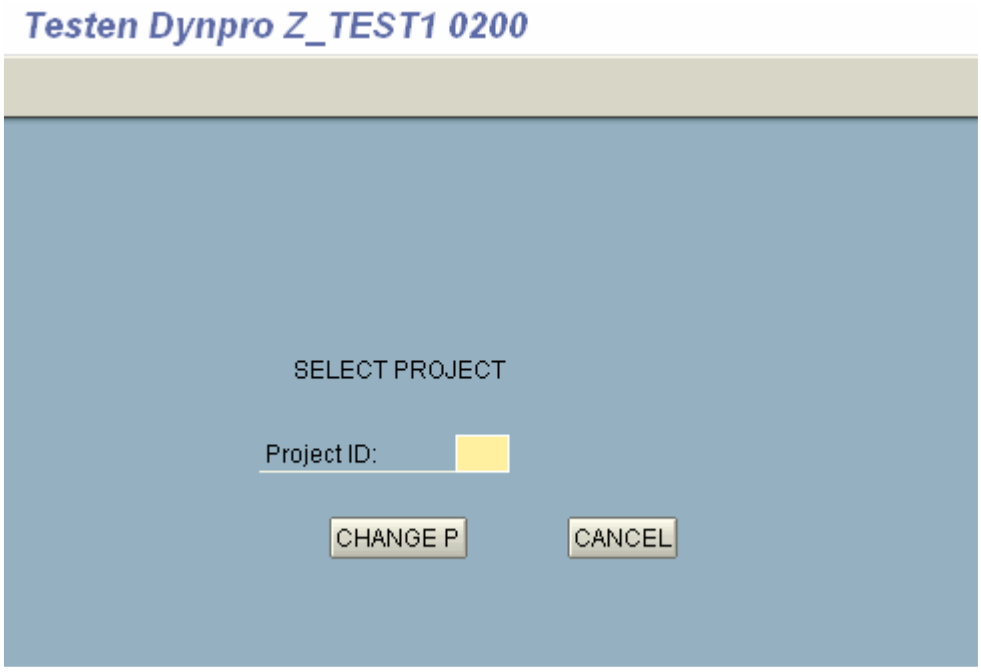
In the next picture appears the screen 100 where we can find the menu with the main utilities for create the data in our data tables.



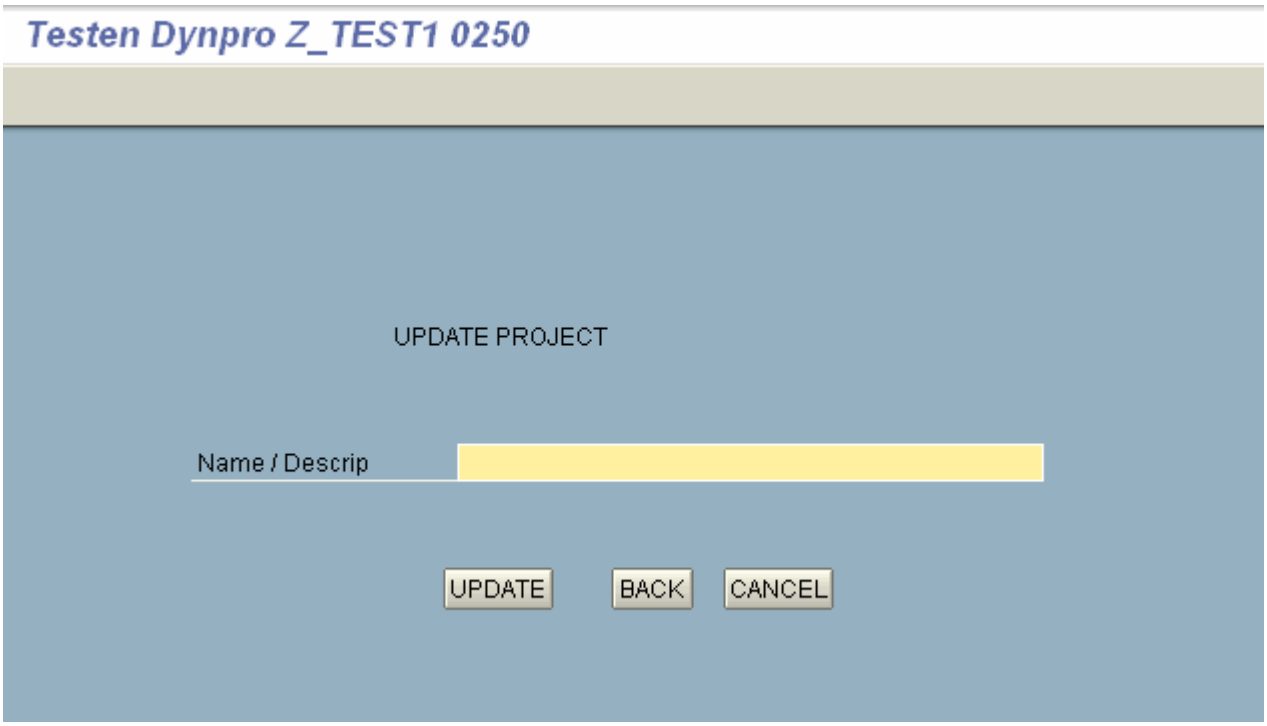
This screen, number 150, corresponds to the option INSERT PROJECT. We have to introduce one new identification number and the name or description of it. In all the screens we have the option to CANCEL or GO BACK. Also we have to press the button SAVE P (save project) if we want to store this new project in our system.



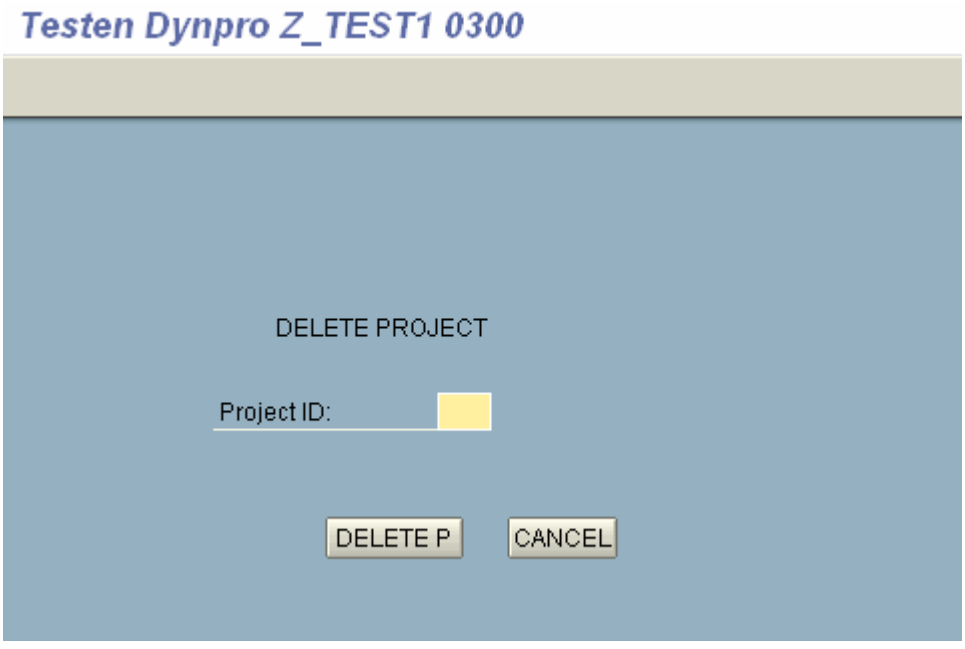
The next screen, number 200, corresponds to the option of UPDATE PROJECT. This option is defined with an independent class in our code (see the appendix). For this action we have to introduce in this screen the ID of the project that we want to change. After it we press CHANGE P.



When we do the last action we jump to the next screen, 250, that is also part of the function UPDATE PROJECT. Here we can change the attributes one project that has been introduced previously. In this case, we only have as field for change the name or description because we don't have more attributes on the database. When we press the button UPDATE we get atomatically the modification in our datatable.

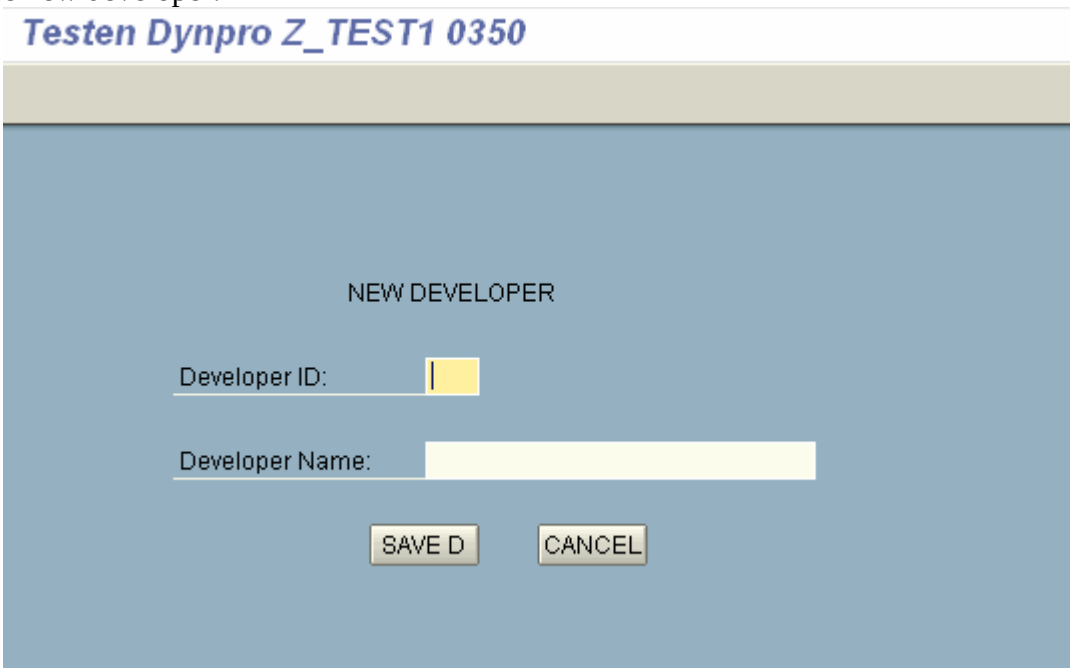


The following screen, number 300 corresponds to the utility of delete one project of our database. The system asks us for the ID of the project that we are interested on delete and then we press DELETE P.

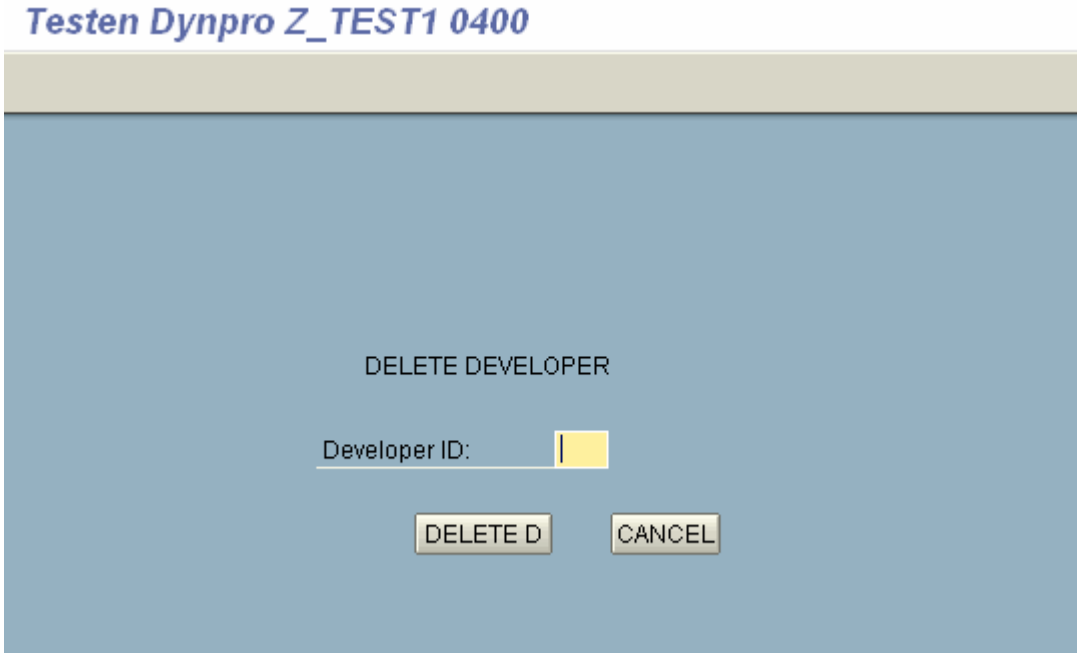


The following screens, number 350 and 400 have the same functions that the screens 150 and 300 but with the difference that we do these actions to the ZDEVELOPER database.

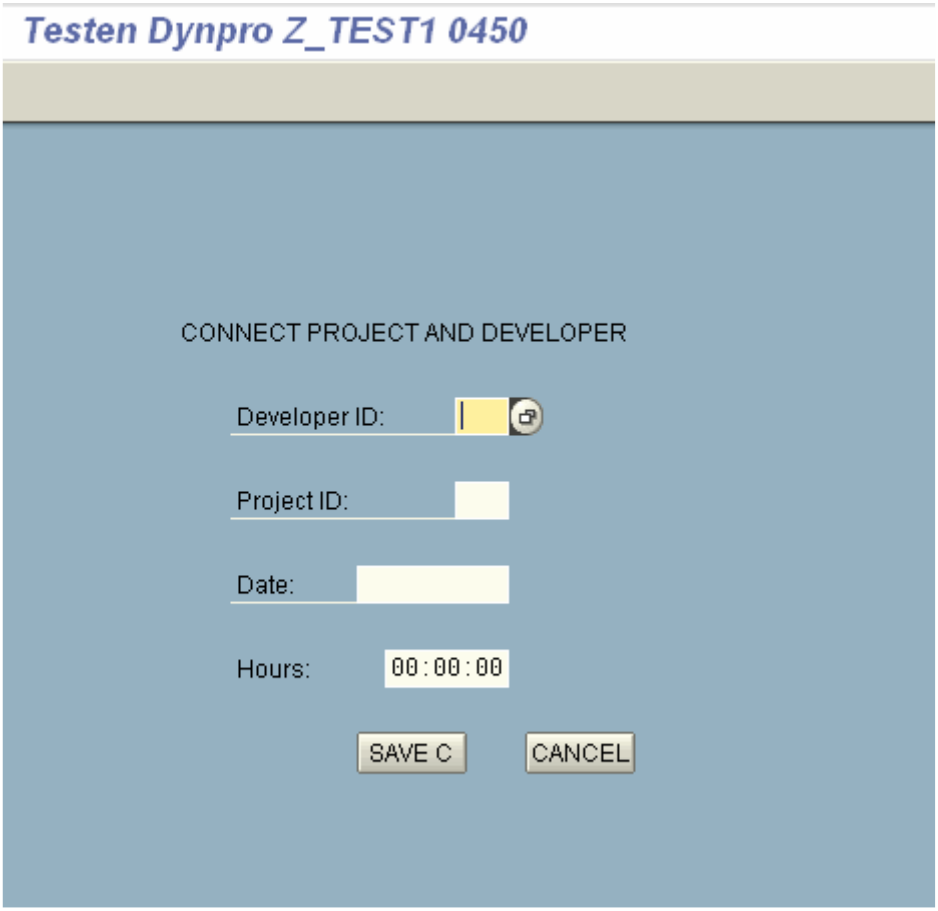
Introduce new developer:



Delete developer of the system:



The screen 450 is where we arrive when we have pressed the button in the menu (screen 100) WORK!. This option as UPDATE PROJECT has one independent class in our code to do the relation betweeen the ID of one developer and the ID of one project in one date and with a concrete amount of hours. If we introduce all of this data and we press SAVE C we get this information in our database ZWORK.



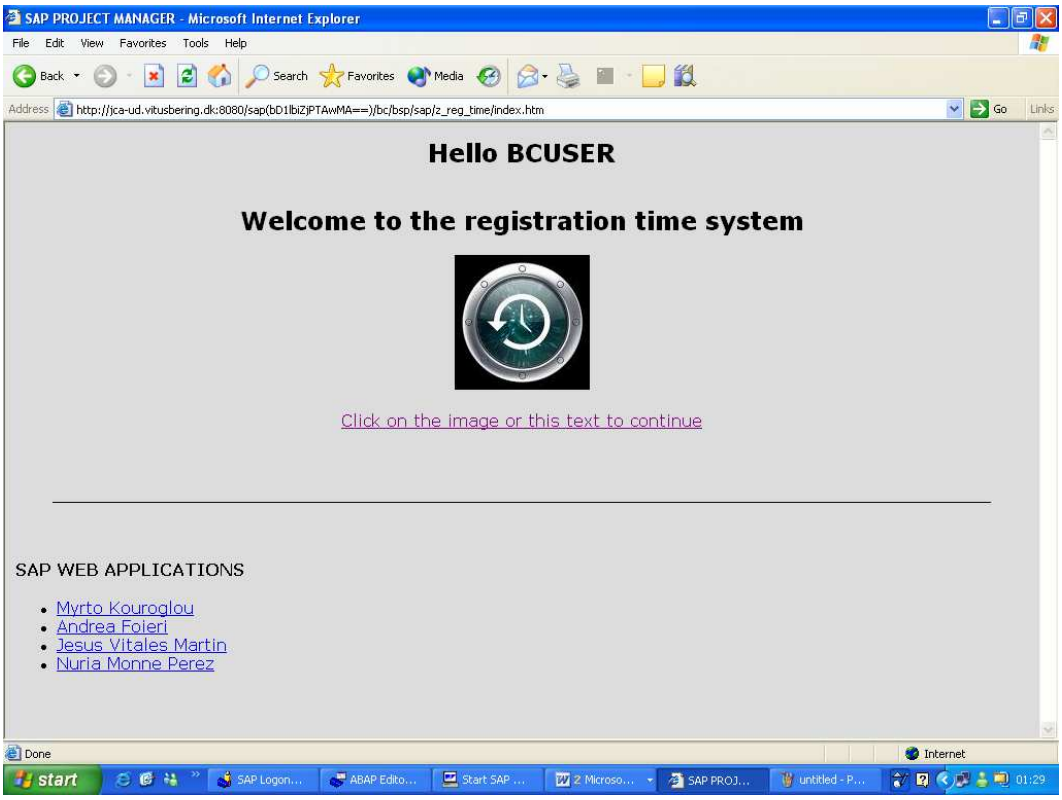
Web Application:

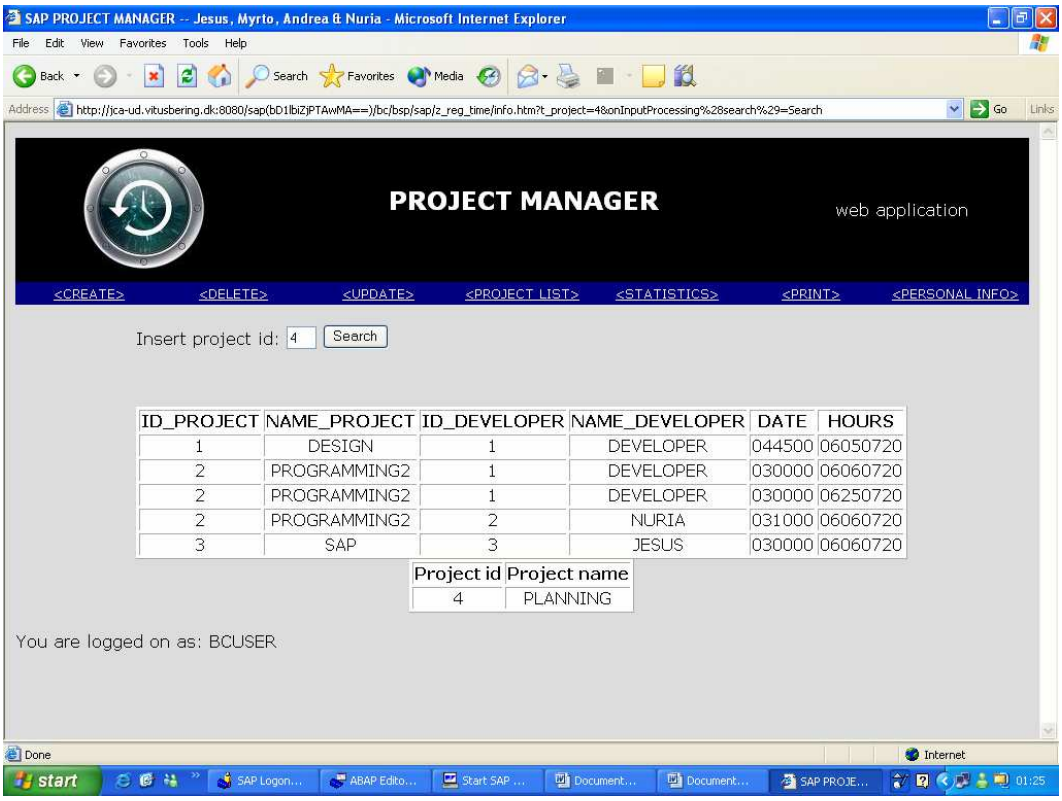
Our web application is composed by two web pages: index.html and info.html

The first one is the resposible of the presentation of our system, with one message of welcome, the link to our main page and our email addresses to contact with us.

If we press in the logo or the link to our page we arrive to the info.html page which is the place were we can interact with our system. This page is composed by five fragments. The first one is the ”Header ”where we find our logo and the name of the application. The second one is the ”Navigation” fragment where we can find the links of some applications as create, delete, update, statistics or print. In the ”Information” fragment we get a data table where we can find all the information of our projects like the description, their developers, the dates when they are working and the hours that they have spent in them. This table is created with the table ZWORK doing JOINS to get the data that we don’t have in it. The following fragment is the ”Search” where we

find one function to introduce the ID of one project and we get the information of it. The last fragment is the ”Footer” where we can see what user is working with our application.





Step 6.3 Study of usability

The study of the usability is an important point due to the fact that can avoid lot of problems and wasted time when rebuilding the application. There are lots of different methods, some of them which we are not able to do, but in this project we will talk about three of them. Two are down this lines and the other one already appeared before (*Focus Group*).

We have to say that, as we are not specialists either heuristic nor usability evaluation, we will not be able to do these usability tests. We should have specific applications to record all the information that we got from the users and what is more important we need a software prototype with more functions to have a better result.

Cognitive path evaluation

This method helps developers to measure the usability and it is based on the evaluation the facility of the learning of the system. It is done by the most common way and the favorite between the users: the exploration[12].

To realize this method it is needed an expert on the standards to evaluate. He or she is supposed to go through all the interface checking if the standards are corrects.

We really apologize that it is not possible for us to make a cognitive walk-through realistic evaluation. It is an important part from the design but we do not have the expert and it is not real if we pretend.

Heuristic evaluation

Heuristic is a method developed by Nielsen and Molich which consists in measure if the interface agrees with the usability principles. It is a usability-testing technique devised by expert usability consultants.

This expert should analyze if the application follows the next ten points ("10 heuristic rules about usability"):

1) Showing the status of the system.
2) Use user's language.
3) Control and freedom for the user.
4) Ensure that it follows the standards and it is consistent.
5) Error prevention.
6) Minimize the cognitive work for the user.
7) Effectiveness and flexibility.
8) Esthetic dialogs and minimal design.
9) Help users to realize, diagnose and recover from the errors.
10) Help and documentation.

12 WHARTON C. ET AL. «The cognitive walkthrough method: a practitioner's guide» en Usability Inspection Methods (NIELSEN J. y MACK R. L. eds.). John Wiley & Sons, New York, NY, pages. 105-140, 1994

Part4 – Review and Documentation

We have arrived to the last part of the development of the system in the reality. After the 3 previous steps, we have read all our notes, put all the information together and started to do the documentation. As result of this effort, we have the system working with all the small details that were missing, now ready and we have got this document.

7. Marketing Plan

7.1 Environment Research

Product Life Cycle

The product life cycle is a model that helps to analyze the maturity stages of a product. The term was first used by Theodore Levitt in 1965 in a Harvard Business Review article: “Exploit the Product Life Cycle” (Vol.43, November-December 1965 pp 81-94).

Based on this model every product has to pass from four stages in order to complete the life cycle. Each stage is associated with charges in the marketing strategy and marketing mix.

Stages of the life cycle:

1. ***Introduction***

The product is new and just entered the market, and is promoted to create awareness. It is highly unlikely that companies will make profits on products at this stage. They have to be carefully monitored to ensure that they start to grow. Otherwise, the best option may be to withdraw or end the product.

2. ***Growth***

Competitors are attracted into the market with very similar offerings. Products become more profitable and companies form alliances, joint ventures and take each other over. Advertising spend is high and focuses upon building brand. Market share tends to stabilize.

3. ***Maturity***

Those products that survive the earliest stages tend to spend longest in this phase. Sales grow at a decreasing rate and then stabilize. Producers attempt to differentiate products and brands are key to this. Price wars and intense competition occur. At this point the market reaches saturation. Producers begin to leave the market due to poor margins. Promotion becomes more widespread and use a greater variety of media.

4. ***Decline***

At this point there is a downturn in the market. For example more innovative products are introduced or consumer tastes have changed. There is intense price-cutting and many more products are withdrawn from the market. Profits can be improved by reducing marketing spend and cost cutting.

IT Programs in Introduction Stage:

Our products are new in the market, which means that they are in the introduction stage of the product life cycle. There are some theoretical guide lines about products in the introduction stage and their marketing strategies.

It is usual that the sales will be low as the product is first introduced to the market. The customers have no knowledge of the product. Informative promotion is needed to tell potential customers about the new product concept. Even though a firm promotes its new product, it takes time for customers to learn that the product is available.

If the product has no or few competitors, a *skimming price* strategy is employed. The practice of 'price skimming' involves charging a relatively high price for a short time where a new, innovative, or much-improved product is launched onto a market. Limited numbers of product are available in few channels of distribution. The objective with skimming is to "skim" off customers who are willing to pay more to have the product sooner; prices are lowered later when demand from the "early adopters" falls. Though the high prices, the company can build a high-quality image. It also gives the luxury to the company of reducing the prices when the threat appears in the market.

On the other hand we have the *penetration strategy* which involves the setting of lower, rather than higher prices in order to achieve a large, if not dominant market share. This will only be possible where demand for the product is believed to be highly elastic, i.e. demand is price-sensitive and either new buyers will be attracted, or existing buyers will buy more of the product as a result of a low price.
The most obvious potential disadvantage of implementing a penetration pricing strategy is the possibility of competing suppliers following suit by reducing their prices also, thus nullifying any advantage of the reduced price (if prices are sufficiently differentiated the impact of this disadvantage may be diminished). A second potential disadvantage is the impact of the reduced price on the image of the offering, particularly where buyers associate price with quality.

Early software companies often used a market leadership strategy wherein they gave away the product to gain a broad base of users and then sold them product upgrades and new releases. Giving away the product built a base of committed users. Many software companies also use a planned obsolescence strategy. They know well in advance when the next release will be available and can then change prices and marketing strategies to empty the pipeline prior to the next release.

More recently we have found companies using a commoditization strategy. The idea behind this strategy is to continuously price the product in such a manner as to keep competitors out of the market. They work to move the product from introduction or solution to maturity or commodity status (commodity slide) as quickly as possible. The goal is to own the market and create your own cash cow (discussed later).

Market

Denmark, officially the Kingdom of Denmark is the smallest and southernmost of the five Nordic countries, and one of the three Scandinavian countries. The mainland is located north of its only land neighbor, Germany, southwest of Sweden, and south of Norway. The national capital is Copenhagen. The population at 2005 was 5,4 million people.

Since 1982, Denmark has pursued a consistent, stability-oriented, macro-economic policy, which among other things has resulted in Denmark today being the EU country with the largest budget surplus of approx. 4% of GDP. In addition, unemployment is below 5% and the surplus on the balance of payments is around 3% of GDP. Denmark also has one of the best-developed infrastructures in the world, a very high general level of education and a very competent workforce.

Denmark is self-sufficient in energy - producing oil, natural gas, wind- and bio-energy. Its principal exports are machinery, instruments and food products. The U.S. is Denmark's largest non-European trading partner, accounting for around 5% of total Danish merchandise trade. Aircraft, computers, machinery, and instruments are among the major U.S. exports to Denmark. There are some 250 U.S.-owned companies in Denmark. Among major Danish exports to the U.S. are industrial machinery, chemical products, furniture, pharmaceuticals, and canned ham and pork.

In many respects, the Danish economy is world-class. For two years running, the Economist Intelligence Unit has nominated Denmark as having the world’s best economic climate for foreign investors and Denmark is also among the highest placed countries in several other international comparison tables.

Based on all the previous information, Denmark is suited to be the general market for our products. Our target-market is companies that are interested in using software for managing better their actions. We are more interested in medium and large companies. Danish companies are used in using technology and this will make it easier to penetrate in the market. Also positive is the fact that in Denmark there are only three software companies, and none of them is purchasing software for business. This will give us a big advantage versus the national competitors.

Competitors

To understand better the meaning and the importance of the competitors, there is a simple but powerful tool, the 5 Forces of Porter (Michael Porter). This is useful, because it helps the company to understand both the strength of its current competitive position, and the strength of a position that wants to look to move into. With a clear understanding of where power lies, you can take fair advantage of a situation of strength, improve a situation of weakness, and avoid taking wrong steps. This makes it an important part of your planning the strategies.

Porter explains that these five forces determine industry attractiveness and long-run industry profitability.

Threats of substitute products:

This is probably the most overlooked, and therefore most damaging, element of strategic decision making. It's imperative that business owners not only look at what the company's direct competitors are doing, but what other types of products people could buy instead. When switching costs (the costs a customer incurs to switch to a new product) are low the threat of substitutes is high. As is the case when dealing with new entrants, companies may aggressively price their products to keep people from switching. When the threat of substitutes is high, profit margins will tend to be low.

Threat of New Entrants:

New entrants to an industry can raise the level of competition, thereby reducing its attractiveness. The threat of new entrants largely depends on the barriers to entry. High entry barriers exist in some industries (e.g. shipbuilding) whereas other industries are very easy to enter (e.g. estate agency, restaurants). Key barriers to entry include

- Economies of scale
- Capital / investment requirements
- Customer switching costs
- Access to industry distribution channels
- The likelihood of retaliation from existing industry players

Rivalry among existing firms:

Companies that are selling equal products are the bigger problem of an industry. When there are many small competitors with almost the same product the rivalry is intense. It is better when there is a market leader company. Also the exit barriers, like high cost of closing down the company, will create higher level of rivalry. On the other hand rivalry is reduced when the switching costs and the degree of differentiation of the products are high.

Bargaining power of Supplies:

Suppliers are the businesses that supply materials & other products into the industry.

The cost of items bought from suppliers can have a significant impact on a company's profitability and can influence the price of the final products. If suppliers have high bargaining power over a company, then in theory the company's industry is less attractive. The bargaining power of suppliers will be high when:

- There are many buyers and few dominant suppliers
- There are undifferentiated, highly valued products
- Suppliers threaten to integrate forward into the industry (e.g. brand manufacturers threatening to set up their own retail outlets)
- Buyers do not threaten to integrate backwards into supply
- The industry is not a key customer group to the suppliers

Bargaining power of Customers:

There are two types of buyer power. The first is related to the customer's price sensitivity. If each brand of a product is similar to all the others, then the buyer will base the purchase decision mainly on price. This will increase the competitive rivalry, resulting in lower prices, and lower profitability.

The other type of buyer power relates to negotiating power. Larger buyers tend to have more leverage with the firm, and can negotiate lower prices. When there are many small buyers of a product, all other things remaining equal, the company supplying the product will have higher prices and higher margins. Conversely, if a company sells to a few large buyers, those buyers will have significant leverage to negotiate better pricing.

Some factors affecting buyer power are:

- Size of buyer – larger buyers will have more power over suppliers.

- Number of buyers – when there are a small number of buyers, they will tend to have more power over suppliers.

- Purchase quantity – When a customer purchases a large quantity of a suppliers output, it will exercise more power over the supplier.

If we use this model on our company, we can summarize it in this table.

Competitive force	Threat to industry profitability		
	Low	Medium	High
Threat of substitutes		•	
Threat of new entrants			•
Rivalry among existing firms	•		
Bargaining power of suppliers	•		
Bargaining power of buyers		•	

In our industry, the program we are selling has not many substitute products. You can find many programs for business solutions but not specific for the project management. This is also the reason why the threat of new entrants is high. The technology and the innovation are improving day by day, and more and more companies will think of creating a product like ours. Since there is no common product in the market like ours the rivalry is low, which make it easier for our product to enter in the market. Creating a software product is not influenced by suppliers. The only supplies, that are needed, are the hardware and the software the programmers will use to create the final program. As far as the buyers are concerned, we can say that they have medium influencing power in our company. The companies that are interested in our products are the large and medium companies. We should also consider the fact that this product is a one time buying product. There can be updates of the software, but the first purchase of the main software is the important one.

We can separate the competitors in three big groups:

- DIRECT COMPETITORS – Businesses offering identical or similar products
- INDIRECT COMPETITORS – Businesses offering close substitute products
- FUTURE COMPETITORS – Businesses that are not yet direct or indirect competitors, but could be at any time

Three are the Danish software companies, Atomistix, CLC bio and IO Interactive.

Atomistix A/S is a software company developing tools for atomic scale modeling. It is headquartered in Copenhagen, Denmark, with a subsidiary for Asia Pacific in Singapore and for the Americas in California. The company's products represent a package of integrated software modules for quantum chemistry modeling, providing a user-friendly graphical interface interaction to complex computational methods.

CLC bio is a bioinformatics company based in Aarhus, Denmark.. CLC bio itself claims that over 36,000 users worldwide use their workbenches (including the free one). It facilitates global research within genetics and proteomics by providing software, hardware and consulting solutions for scientists, laboratory researchers, and students, which improve their scientific results and make their daily work both easier and more effective. The company started out making a free desktop

workbench for basic bioinformatics, CLC Free Workbench, which was released in July 2005. Commercial workbenches for advanced bioinformatics have been added since. CLC bio's software is platform independent and can thus be used for both Mac OS X, Windows, and Linux.

IO Interactive A/S is a Danish computer game developer currently owned by Eidos Interactive. It was founded in September 1998. They have created the four games in the successful Hitman series (Hitman: Codename 47, Hitman 2: Silent Assassin, Hitman: Contracts, Hitman: Blood Money).They are also responsible for the critically acclaimed game Freedom Fighters and the upcoming Kane & Lynch: Dead Men.

Since these software companies have nothing to do with business solutions, we can characterize us as not dangerous competitors, which maybe can also be future ones. It is certainly not a threat to our company, since we will have enough time for our company to set up in the market and win its trust.

Outside, we have also a lot of software companies which are not developing programs for business but they can also be future competitors, if they decided to penetrate in a new market segment.

On the other hand there are many companies, which have developed also tools for usage inside the business, but this is not there only product. We can categorize all these business tools in the following groups:

- Applicant Tracking
- Assessment
- Benefits Management
- Commission
- Employee Appraisal Software
- Human Resources (HR)
- Incentive Compensation Software
- Invoice Software
- Payroll Software
- Resource Planning
- Salary Planning Software
- Time Clock
- Time Off Tracking
- Timesheet
- Workforce Management

The software of this marketing plan can not be sorted in any of these groups. There are some similarities but our product has characteristics from more than one group. All these products are from manufactures that can be described like indirect competitors. The characteristics of our software differ from all these ones.

Based on our research though the internet, it is obvious that there is no direct competitor. Our product is unique. It is possible to find some similar features in other companies' software but not the exact product.

Without direct competitors, it is very easy for the company to penetrate the market. And it is of big importance that the indirect competitors come out of Denmark, which makes our company the only one inside Denmark.

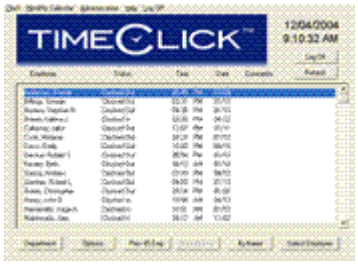
Some examples of indirect competitors:

ManagerAssistant.com

Employee Performance Management Software

Manager Assistant lets you track, evaluate and control the behavior, performance and activities of your employees — easily and quickly — using just one application. Manager Assistant helps you store, track and organize your most important employee and business information in one place. Everything you need to track and monitor employee behavior, activities and management processes is now available within a single, easy-to-use, affordable application. Available in single-user and network/multi-user editions.

TimeClick Software



Employee Performance Management Software

This PC based time clock software is a very good choice for the small to mid-size business. Using this software the employee's clock in and out using the existing network. TimeClick stores this information and automatically calculates employee hours for your payroll, which saves you time and money. Unlike other time clocks, TimeClick allows you to manage an unlimited number of employees. TimeClick manages the employees' time so you don't have to.

SelectionSheet.Com

Selectionsheet: Construction Sheduling & Project Management

Whether you are a seasoned veteran or a first time builder, this software and services will support your specific needs. The software is web based and allows you to access your schedules, contacts, subcontractors and the like from anywhere. Anywhere you have an internet connection, you have SelectionSheet. Our product will better manage time, tasks, and the building process as a whole, regardless of how much you may know about a computer. The initial setup is minimal, allowing you to input and customize as you go.

SAP BUSINESS ONE

SAP Software Solutions for Great Companies - not just Great Big Companies

Integrated Accounting Software for SMEs (Small and Medium Enterprises)

SAP Business One is a comprehensive and versatile business management solution equipped with an easy-to-use interface. The solution provides all the administrative functions that let you customize and back-up data, define currency exchange rates, and configure permissions and alerts. In addition, it comprises 11 areas of functionality that help extend its capabilities far beyond its primary administrative function and enable it to streamline your entire business processes. These areas of functionality are:

Financial Accounting
SAP Business One handles all the financial transactions including general ledger, account set up and maintenance, journal entries, foreign currency adjustments and budgets.

Sales
The software helps you create price quotes, enter customer orders, set up deliveries, update stock balances and manage all invoices and accounts receivables.

Purchasing
Manages and maintains supplier transactions such as issuing purchase orders, updating stock numbers, calculating the value of imported items, handling returns and credits, and processing payments.

CRM
Controls all the information on customers, prospects, resellers and suppliers including profiles, contact summaries, account balances and sales pipeline analysis.

ServiceManagement
Optimises the potential of the service departments, providing support for service operations, service contract management, service planning, tracking of customer interaction activities, customer support and management of sales opportunities.

StockControl
Handles stock levels, item management, price lists, special price agreements, transfers between multiple warehouses and stock transactions.

Production/MRP
SAP Business One offers a simple yet powerful planning system that helps production planners or buyers schedule and manage items for production or purchasing based on a variety of criteria.

Reporting
Creates powerful reports for nearly every aspect of your business including customer and supplier debt, sales, cash flow, customer contact summaries, book-keeping, warehouse stock, financial statements, pricing, customer activity and more (via pre-defined reports or define-it-yourself queries).

Controlling
Lets you define profit centers and distribution rules to distribute the costs to these profit centers. You can also generate profit-and-loss reports for each centre.

HR
The Human resources module within SAP Business One allows you to capture pertinent information about each employee

Business Buying Behavior

Since we are producing a product that is going to be used from businesses, it is important to analyze the Business Buying Behavior. There are many differences between customer and business buying behavior, and it would be totally wrong to examine the business buying behavior with the criteria of the customer's.

Depending on how the company is using the product that will buy, the business market can be separated in groups like the resale/wholesale market, the industrial market, the institutional market etc. In our case, the market that is interested in our products is the industrial market, since the programs that we are selling are used inside the companies and are helping in the better organization of it.

Buying Situation

There is a division of the buying situations based on the number of decisions that have to be taken in order to finally make the purchase. Each of these situations will affect the purchase process. The three situations are:

Straight rebuy
Modified rebuy
New task

A ***straight rebuy*** is the purchase of standard parts; maintenance, repair, and operating items and supplies; or any recurring need that is handled on a routine basis. Usually there is an long lasting relationship of trust with the supplier which makes the purchase with quickly and more easy.

A ***modified rebuy*** is a situation such that the buying center has some relevant experience to draw upon. The alternatives considered, however, are different, or changed from the ones considered the last time a similar problem arose.

A ***new task*** purchase is a problem or requirement that has not arisen before such that the buying center does not have any relevant experience with the product or service. This means that the company should start a whole new search for the product and the possible suppliers.

Buying an IT product, like the ones that our company is selling is placed in the ***New Task*** category. Our products are new, and businesses are not familiar with the nature of the products. In this situation the work of marketing department is rather difficult. There are a lot of obstacles that have to be over passed before the purchase. These obstacles are actually the stages in the business buying process.

Stages of Business Buying Behavior

1. Problem Recognition

It is the recognition that the current product or service can be replaced by a better product or service or that a cheaper way to operate exists. It can also be recognition of a totally new problem, which means that a need has to be fulfilled by a new product or services (new task). Problem recognition may be stimulated internally (by a value analysis or audit, for example) or externally (by exposure to an advertisement or by a salesperson's visit).

2. General Need Description

Understanding the nature of the need is an important step. If the need is complicated it needs more time and maybe deeper research.

3. Product Specification

Now that the need has been examined, it is time to find the main characteristics that the product should have. After finding some standards, the buyer can try to find the best solutions of our problem thought the products that are already on the market.

4. Supplier search

Trying to identify the most appropriate supplier. There are a lot of ways to find suppliers. The problem is to end up with a smart list of most qualified ones.

5. Proposal solicitation

The buyer collects proposals from the suppliers and examines them carefully. The proposals can be either written or oral, depending on the supplier and the nature of the product.

6. Supplier selection

After having all the information from the proposals, the buyer has to select one supplier. Important criteria in this selection are the followings, delivery reliability, price, supplier reputation, technical services, supplier flexibility and product reliability ect.

7. Order-routine specification

Since the supplier has been selected, the buyer has to negotiate the final order, the technical specifications, the quantity, the delivery schedule, ect.

8. Performance review

The last step is reviewing and evaluating the supplier. Though the whole process, the buyer can see if he is satisfied by the co-operation with the supplier, and if it is profitable to continue in the future.

Buying Center

In the consumer market a very large percentage of purchase decisions are made by a single person. The business market is significantly different. While single person purchasing is not unusual, especially within a small company, a significant percentage of business buying, especially within larger organizations, requires the input of many. In the marketing literature those associated with the purchase decision are known to be part of a Buying Center, which consists of individuals within an organization that perform one or more of the following roles:

- ***Buyer*** – responsible for dealing with suppliers and placing orders (e.g., purchasing agent)
- ***Decider*** – has the power to make the final purchase decision (e.g., CEO)
- ***Influencer*** – has the ability to affect what is ordered such as setting order specifications (e.g., engineers, researchers, product managers)
- ***User*** – those who will actually use the product when it is received (e.g., office staff)
- ***Initiator*** – any Buying Center member who is the first to determine that a need exists
- ***Gatekeeper*** – anyone who controls access to other Buying Center members (e.g., administrative assistant)

It is important that the marketing department first identifies who plays what role. Once identified the marketer must address the needs of each member, which may differ significantly. For instance, the Decider, who may be the company president wants to make sure the purchase will not negatively affect the company's bottom line while the Buyer wants to be assured the product will be delivered on time. Thus, the way each Buying Center member is approached and marketed to requires careful planning in order to address the unique needs of each member.

7.2SWOT Analysis

SWOT analysis is a tool for auditing an organization and its environment. It is the first stage of planning and helps marketers to focus on key issues. SWOT stands for strengths, weaknesses, opportunities, and threats. Strengths and weaknesses are internal factors. Opportunities and threats are external factors.

For our product:

Strengths:

- There is no similar product as ours in the market.
- User friendly product
- Possibility of an online purchase

Weaknesses:

- New product, new brand on the market
- Customers do not thrust the company yet
- Need of a big budget
- High price

Opportunities:

- No Danish competitors
- Easy entering in the market
- Moving in another market, another country
- Creating product packages with lower prices

Weaknesses:

- Existence of a lot of indirect competitors and substitutes products
- Indirect Danish competitors can copy our product
- Competitors can offer better products in better and cheaper packages

7.3Strategies

Marketing strategy concerns the decisions marketers make to help the company satisfy its target market and attain its business and marketing objectives. Price, of course, is one of the key marketing mix decisions and since all marketing mix decisions must work together, the final price will be impacted by how other marketing decisions are made. For instance, marketers selling high quality products would be expected to price their products in a range that will add to the perception of the product being at a high-level.

It should be noted that not all companies view price as a key selling feature. Some firms, for example those seeking to be viewed as market leaders in product quality, will deemphasize price and concentrate on a strategy that highlights non-price benefits (e.g., quality, durability, service, etc.). Such non-price competition can help the company avoid potential price wars that often break

out between competitive firms that follow a market share objective and use price as a key selling feature.

Michael Porter has proposed three main types of strategies, in which the whole meaning of marketing strategies is being summarized.

The first one is the ***overall cost leadership***, where the business is trying to lower the costs of production and distribution so that the price can be kept also low. As a result, the business will be distinguished from the competitors and it will win a large market share. The disadvantage of this strategy is that the competitors can also lower their price and can gain back the market share.

On the other hand, a business can use the ***differentiation*** strategy, by concentrating in each specific beneficial target group with a different strategy. The strategies are designed and developed separately for each group, in order to achieve superior performance in every one of them. It is natural that this kind of strategy move will need a big budget.

To minimize these expenses, there is the ***focus*** strategy. By choosing less market segments, or even just one, the business is concentrating on them, and it is easier for it to control the actions that should happen.

Our company is in its first step. The budget is low and so is its reputation. We cannot follow the differentiation strategy because of the budget and we cannot follow the overall cost leadership because of the immediate need of cash coming in to the company. As we will sell the product in a high price (skimming price strategy – we will explained in the next pages) our only solution is the focus strategy. We will focus only in the Danish market. Also at first we will contact only medium and large enterprises, which we know have the possibility of spending money in a product like ours. As our profit will rise, we can expand the limits of our market segments.

7.4Marketing Mix

The marketing mix is a combination of marketing tools that are used to satisfy customers and company objectives. Based on the environmental research, the swot analysis and the strategies, it is time to create the product and its features. For this reason we have four basic points, Product, Price, Promotion, and Place. The 4Ps as most people know them.

Product

The first element in the marketing mix is the product. A product is any combination of goods and services offered to satisfy the needs and wants of consumers. It can be anything tangible or intangible that can be offered for purchase or use by consumers. A tangible product is one that consumers can actually touch, such as a computer. An intangible product is a service that cannot be touched, such as computer repair, income tax preparation, or an office call.

Typically, a product is divided into three basic levels. The first level is often called the ***core product***, what the consumer actually buys in terms of benefits. For example, consumers don't just buy trucks, they buy the benefit that trucks offer, like being able to get around in deep snow in the winter. Next is the second level, or ***actual product***, that is built around the core product. The actual product consists of the brand name, features, packaging, parts, and styling. These components provided the benefits to consumers that they seek at the first level. The final, or third, level of the product is the ***augmented component***. The augmented component includes additional services and benefits that surround the first two levels of the product. Examples of augmented product components are technical assistance in operating the product and service agreements.

Our product has been designed to help companies control and manage their projects, without losing valuable time. This need that executives have in a company is the core product. The actual product with all its characteristics is being analyzed in the IT part. And finally the augmented component is referring to the after sells services. Our software has a product package, on which the buyer has a possibility of getting back the money if problems with the software appear until one year after the purchase. Also there is a call center of our company which is available for all the customers if they need information or help though the phone.

Price

The second element in marketing mix is price. Price is simply the amount of money that consumers are willing to pay for a product or service.

Pricing new products and pricing existing products require the use of different strategies. For example, when pricing a new product, businesses can use either market-penetration pricing or a price-skimming strategy. A ***market-penetration pricing strategy*** involves establishing a low product price to attract a large number of customers. By contrast, a ***price-skimming strategy*** is used when a high price is established in order to recover the cost of a new product development as quickly as possible. Manufacturers of computers, videocassette recorders, and other technical items with high development costs frequently use a price-skimming strategy.

Based on the above, for our product we will use the price-skimming strategy, in order to identify the customers that are willing to pay a higher price, and understand better our market. This way also the business will benefit economically, since quickly profits will start rising.

Place (distribution)

Place represents the location where a product can be purchased. It is often referred to as the distribution channel. It can include any physical store as well as virtual stores on the Internet.

Placement of the product is crucial. There are often many paths (i.e. channels) which a product can take in going from your shop to the customer. A channel "map" can be drawn in order to visualize this keeping in mind all the middlemen, agents, shops, stores, etc. along the way.

At the risk of oversimplifying, a good practical way to determine, or at least analyze, appropriate channels for your product would be to start at the point of final purchase. Who is the final consumer or user of your product? Where does that person look when buying your type of product? Once the various channels have been identified, it is easier to determine which ones make the most sense or which ones offer the path of least resistance.

Our product will have three distribution channels. Firstly, we have our main office in Aarborg where there will be also a shop of all our products. Customers that visit our office should have the chance of buying the products there. Of course, this is not enough. Since our products are software, it is almost compulsory to have an online shop. Except the main website of the company, there should be the possibility to make a purchase online. This way the customers get the product immediately and without having to leave their office. And finally, in our budget we have calculated one seller, who will make visits in possible customers and who can also sell the product in the same time. For our product, the market we are targeting, and the early stage of the company these distribution channels are enough. As time passes the sellers, the shops and the offices will multiply.

Promotion

Promotion is a communication process that takes place between a business and its various publics. Publics are those individuals and organizations that have an interest in what the business produces and offers for sale. Thus, in order to be effective, businesses need to plan promotional activities with the communication process in mind. Promotion can take many forms: advertising in various media, events, press releases, trade shows, brochures, flyers, and internet sites to name a few.

There are four basic promotion tools: advertising, sales promotion, public relations, and personal selling. Each promotion tool has its own unique characteristics and function.

For instance, ***advertising*** is described as paid, nonpersonal communication by an organization using various media to reach its various publics. The purpose of advertising is to inform or persuade a targeted audience to purchase a product or service, visit a location, or adopt an idea. The purpose of product advertising is to secure the purchase of the product by consumers. Advantages of advertising include the ability to reach a large group or audience at a relatively low cost per individual contacted. Further, advertising allows organizations to control the message, which means the message can be adapted to either a mass or a specific target audience. Disadvantages of advertising include difficulty in measuring results and the inability to close sales because there is no personal contact between the organization and consumers.

The second promotional tool is ***sales promotion***. Sales promotions are short-term incentives used to encourage consumers to purchase a product or service. Sales promotion has several advantages over other promotional tools in that it can produce a more immediate consumer response, attract more attention and create product awareness, measure the results, and increase short-term sales.

Public relations is the third promotional tool. An organization builds positive public relations with various groups by obtaining favorable publicity, establishing a good corporate image, and handling or heading off unfavorable rumors, stories, and events. Organizations have at their disposal a variety of tools, such as press releases, product publicity, official communications, lobbying, and

counseling to develop image. Public relations tools are effective in developing a positive attitude toward the organization and can enhance the credibility of a product. Public relations activities have the drawback that they may not provide an accurate measure of their influence on sales as they are not directly involved with specific marketing goals.

The last promotional tool is ***personal selling***. Personal selling involves an interpersonal influence and information-exchange process. Personal selling does provide a measurement of effectiveness because a more immediate response is received by the salesperson from the customer. Another advantage of personal selling is that salespeople can shape the information presented to fit the needs of the customer. Disadvantages are the high cost per contact and dependence on the ability of the salesperson.

Within the promotional mix there are two promotional strategies: pull and push. Pull strategy occurs when the manufacturer tries to establish final consumer demand and thus pull the product through the wholesalers and retailers. Advertising and sales promotion are most frequently used in a pulling strategy. Pushing strategy, in contrast, occurs when a seller tries to develop demand through incentives to wholesalers and retailers, who in turn place the product in front of consumers.

The Internet

The internet, especially the World Wide Web (www) will have a profound impact on marketing. It is totally revolutionizing the marketing function. In the few short years (since approx. 1995) since the web has surfaced, the technology and its benefits have been globally embraced by technology and non-technology businesses and customers. Even so, we are just seeing the beginning. Market strategy (the 4P's) will not just be affected by the internet; it will be driven by it. Companies cannot afford not to be internet ready and internet-literate. "E-commerce" (i.e. electronic commerce) is the wave of the future. We will be able to instantly gain information on competing products' prices, distribution methods, promotion, etc. The internet will not only provide customers with information, it will in itself be a channel for the shopping, ordering, and delivery of products.

For our product it is important to remember that the customers are actually other companies. For advertising the product, the most logical thing to do is put advertisements and advertorials (paid editorials-articles used for advertising reasons) in press that have as a target companies (departmental press). There are magazines about the economy for instance that are read by the majority of the companies every month. Having an entry in this kind of press makes the product more known. Of course advertisement will be also from our website and form other websites which are the same kind as the press we referred to above.

Very important for this kind of product is the personal sale. In our budget we have one salesman for the first two year. This salesman with the right training can bring a lot of customers to the company. By meeting with the customers he has the possibility to explain in easy words why the customer should buy this product. Having a personal meeting makes it easier to understand the needs of the customer, and generally is more lucrative than the other methods.

If the budget gives us the possibility, one more smart move is to participate in trade fairs. In this trades, the customers come to us. We do not have to find them. They are coming because they are interested in finding something new, even if they do not know the existence of this product.

Since we are in the starting period of this product, and also this company, it is not wise to spend our budget to public relationships and sales promotion. When the company and the product will become more known to the market we can use them, but in this point there is not reason. They will not give the expected results.

8. Budgets

8.1 Establishing Objectives in a Long-term Perspective

Our corporate objectives at the end of the fifth year of activity can be defined as follows:

Year	ROI (Return on Investments)	ROS (Profit margin)
2011	13%	15%

8.2 Identify Potential Strategies

Our generic strategy will be based on focus. Therefore the aim of our organization will be to seek some unique dimension in our product that is valued by consumers, and which can command a premium price. As we are going to produce SAP application which companies can add in their software to manage some aspects of their activities, we think that this kind of product will allow us to achieve an advantage based on differentiation from all the other competitors.
Moreover we are going to focus our sub-strategies on developing new products for sale in existing markets. Danish market at the moment is rich of companies that need some product in order to manage activities which nowadays show a decrease in efficiency. As we are a start-up company we cannot say that we are already in the market, but we consider Danish market as a source of potential growth and therefore our strategies, even if we have to enter in a new market, is based on selling our new products to companies which already use software application in their daily activities.

8.3 Preparation of Budgets

I First-year budget

We start our preparation of the budget with two main ratios that we will try to consider as our benchmark for the five years.
We start in the year 2007 with a ratio Foreign capital/Equity of 1.8 and with an expected Return on Investments of around 2%, and trying to respect the financial equilibriums that compared Current assets with Short term debts.

To start our business we will have to make some big investments at the beginning. The price that we have to pay to establish our company and to make it working is estimated to be approximately 450,000 €. As we know from establishing companies usually you have to take in consideration that your calculations are usually not exact and that the money you actually need for the establishment is usually almost doubled, due to the fact of unexpected costs.

Therefore, if our estimated need of capital is around 450,000 € and our benchmark in the ratio Foreign capital/Equity has to be around 1.8, it means that:

Foreign capital → 1.8
Equity → 1
Total liabilities → 2.8

(450000 / 2.8) * 1.8 =	289,286	Foreign capital
(450000 / 2.8) * 1 =	160,714	Equity
	450,000	Total liabilities

Consequently, as our Return on Investment for the first year is expected to be around 2% and our total Investments are expected to be around 450,000, we can easily calculate the EBIT (Earning Before Interests and Taxes):

EBIT → 450,000 * 2% = 9,000

Now we assume that our Profit margin of Return on Sales should be around 1.5%. Therefore:

Revenues → 9,000 / 1.5% = 600,000

It means that, if our estimated selling price of a general software application that we are going to produce is 10,000 euros, we are expected to sell 60 units. This figure will represent our objective of sale for the year.

Of the total of foreign capital, we assume that 250,000 euros are represented by a loan from the bank, and the others are supplier credits (289,286 – 250,000 = 39,286).
The debtors are able to cover the short term debts and we assume that they are around 60,000 euros. We assume that the inventories are 10,000 euros and consequently the fixed assets will be (450,000 – 60,000 – 10,000) = 380,000.

The rate of interest on the loan required by the bank is 11%. So the interests on the loan which will be considered in the Profit and Loss Budget will be (250,000 * 11%) = 27,500.

As the fixed assets are mainly represented by high-tech assets, we assume that the depreciation rate will be around 20%. Therefore the value of depreciation in the Profit and Loss Budget will be (380,000 * 20%) = 76,000.

The nominal corporate tax rate in Denmark is 28% but the real one – according with some official estimations – is lower. In some cases, thanks to many deductible expenses, companies are not paying any taxes, even if they close the year with an economical profit. We assume that, for higher profits, the real tax rate is around 20%.
Now we are able to present the Balance Sheet Budget and the Profit and Loss Budget for the year 2007.

Balance Sheet Budget 2007

Assets	2007	Liabilities	2007
Fixed assets	380,000	*Equity*	160,714
Current assets	70,000	*Foreign capital*	289,286
• debtors	60,000	• mortgage debt	250,000
• inventories	10,000	• supplier credit	39,286
Total assets	450,000	*Total liabilities*	450,000

Profit and Loss Budget 2007

Turnover - Direct materials - Direct wages	600,000 (144,500) (0)
Contribution - Fixed costs	455,500 (370,500)
EBITDA - Depreciations	85,000 (76,000)
EBIT - Mortgage debt interests	9,000 (27,500)
Earning before taxes - Taxes	(18,500) 0
Net profit	(18,500)

Once presented the Balance Sheet and the Profit and Loss budget, now we are going to illustrate the investments needed to the business start-up.
We assume that, as we are producing software applications, we need to invest some money in hardware and software to allow the technician to start to produce the applications. Moreover, we need some furniture and inventory equipment. And for sure we need a test equipment in order to test the applications before selling them to the costumers. In the initial investment we have also to consider the so-called start-up costs.
The following table will show the exact figures.

Investments	2007
Computer & Network	150,000
Furniture	60,000
Inventory equipment	50,000
Test equipment	70,000
Start-up costs	50,000
Total investments	**380,000**

II Second-year budget

After having planned the budget for the year 2007, now we are going to make some assumptions in order to forecast the activity for the next year.

Our market is growing, with elevated possibilities to expand our activity and to sell our applications to a major number of companies in the entire country. Therefore we suppose, and this is not merely an assumption but it represents an objective that we are going to achieve in the years, that our turnover will increase in 2008 by 7%. Our costs will remain more or less at the same level as our activity doesn't require row materials or too many other indirect costs, so we know that the costs are mainly represented by labour cost, that it's easy to forecast as we know from the last year how much money do we need to pay the wages to our employees.
Moreover, our expected Return on Investments for the second year is supposed to be around 3.5% as our activity is growing but we also need to invest money to support the activity.
Concerning the Balance Sheet Statement, the new investments will be cover by renewing the mortgage from the bank and for this reason the bank is going to ask an higher interest rate, being around 12%.
With these new data, now we are going to present the Balance Sheet budget and the Profit and Loss budget for the year 2008, considering the relations between the two documents, and later on we are going to present and analyze the Liquidity budget.
Anyway, like in the first year, we are expecting to close the financial year with a loss.

Balance Sheet Budget 2008

Assets	2008	Liabilities	2008
Fixed assets	500,000	*Equity*	160,714
Current assets	128,571	*Foreign capital*	467,857
• debtors	122,571	• mortgage debt	350,000
• inventories	6000	• supplier credit	117,857
Total assets	628,571	*Total liabilities*	628,571

Profit and Loss Budget 2008

Turnover - Direct materials - Direct wages	642,000 (180,000) (0)
Contribution - Fixed costs	462,000 (340,000)
EBITDA - Depreciations	122,000 (100,000)
EBIT - Mortgage debt interests	22,000 (39,750)
Earning before taxes - Taxes	(17,750) 0
Net profit	(17,750)

From the Balance Sheet budget we can see that the total mortgage required to finance the investments will be for the year 2008 around 350,000 euros, that means:

Total mortgage 2007	250,000
- 10% of the mortgage	(25,000)
= Mortgage primo	225,000
+ new loan	125,000
= Total mortgage 2008	350,000

Therefore the total mortgage debt interests in the Profit and Loss budget for the year 2008 will be calculated as follows:

Interests on mortgage primo	225,000 * 11% =	24,750
Interests on the new loan	125,000 * 12% =	15,000
Total mortgage debt interests		39,750

The previous calculation is a perfect example of the connection existing between different documents of a budget. But now we are going to illustrate other relationships by presenting the Liquidity budget, that derives by the analyze of some voices of both the other documents, Balance Sheet and Income Statement.

We are going to present the Cash flow budget for both the years, 2007 and 2008, in order to illustrate the initial trend of the cash-in and cash-out.
In order to present the Liquidity budget, we need to calculate the yearly variation in the Working Capital, which is composed by the voices Debtors, Inventories and Creditors.

Working Capital

	2007	**2008**
Debtors		
Primo	0	60,000
Ultimo	60,000	122,571
Change	-60,000	-62,571
Inventories		
Primo	0	10,000
Ultimo	10,000	6,000
Change	-10,000	+4,000
Creditors		
Primo	0	39,286
Ultimo	39,286	117,857
Change	+39,286	+78,571
Total change	**(30,714)**	**20,000**

Now we are able to calculate the Cash Flow budget for both the years, by considering that we have to start by our Result before Depreciations and Amortizations (EBITDA) as depreciations and amortizations are no-cash voices and they have influences only under an economic point of view (Income statement) but not under a financial point of view (Liquidity statement).

Liquidity Budget

	2007	2008
Liquidity primo	0	(378,214)
Result before depreciations	85,000	122,000
Change in Working capital	(30,714)	20,000
Change in Fixed assets (investments)	(380,000)	(200,000)
Payments on loan	(25,000)	(37,500)
Interests	(27,500)	(39,750)
Taxes	0	0
Liquidity ultimo	**(378,214)**	**(513,464)**

By looking at these figures, we can state that the initial cash flow trend is a decreasing one, as in the second year of activity we have to face an higher cash out compared with the previous year.

III Five-years budget

At this point, once finished our forecast for the two first years of activity, we are going to present the budget for the next three years, by considering the following information:

- the debtors are growing by 5% every year;
- the creditors are growing by 6.5% in 2009, by 10% in 2010 and by 17% in 2011;
- our Return on Investment will be 7% in 2009 and 10% in 2010 and we will check if we will meet our objectives in 2011;
- our turnover will show + 11% in 2009, + 16% in 2010 and + 23% in 2011, as our business is growing.

The tables below will show the figures concerning the Balance Sheet Budget and the Income Budget for the entire period considered, from 2007 to 2011, giving an overview of the economical situation of the company. Another table will show the fixed costs our company will have to face.
After this we are going to analyze the cash flow for the next three years and, at the end, we will check and analyze if we are going to meet our objectives and if our company will be able to maintain the financial equilibriums required to be competitive.

Balance Sheet Budget 2007-2011

	2007	2008	2009	2010	2011
Assets					
Fixed assets	380,000	500,000	470,000	605,255	692,448
Current assets	70,000	128,571	138,857	161,135	181,891
• debtors	60,000	122,571	128,700	135,135	141,891
• inventories	10,000	6,000	10,857	26,000	40,000
Total assets	450,000	628,571	608,857	766,390	874,339
Liabilities					
Equity	160,714	160,714	170,839	173,320	301,536
Foreign capital	289,286	467,857	438,018	593,070	572,803
• mortgage debt	250,000	350,000	312,500	455,000	408,500
• creditors	39,286	117,857	125,518	138,070	164,303
Total liabilities	450,000	628,571	608,857	766,390	874,339

Profit and Loss Budget 2007-2011

	2007	2008	2009	2010	2011
Turnover	600,000	642,000	712,620	826,639	1,016,766
- Direct materials	(144,500)	(180,000)	(170,000)	(165,000)	(172,500)
- Direct wages	(0)	(0)	(0)	(0)	(0)
Contribution	455,500	462,000	542,620	661,639	844,266
- Fixed costs	(370,500)	(340,000)	(380,000)	(375,000)	(390,000)
EBITDA	85,000	122,000	162,620	286,639	454,266
- Depreciations	(76,000)	(100,000)	(120,000)	(210,000)	(220,000)
- Amortizations					(90,000)
EBIT	9,000	22,000	42,620	76,639	144,266
- Mortgage debt interests	(27,500)	(39,750)	(35,500)	(52,850)	(47,520)
Earning before taxes	(18,500)	(17,750)	7,120	23,789	96,746
- Taxes	0	0	0	0	(19,349)
Net profit	(18,500)	(17,750)	7,120	23,789	77,397

Fixed costs 2007-2011

Head count	2007	2008	2009	2010	2011
Managing director	1	1	1	1	1
Salesman	1	1	2	2	2
Software developer	2	2	2	2	2
Administrative staff	0	0	0	0	1
Inventory staff	0	0	0	0	0
Total	**4**	**4**	**5**	**5**	**6**

Yearly salary	2007	2008	2009	2010	2011
Managing director	65,000	65,000	65,000	65,000	65,000
Salesman	55,000	55,000	55,000	55,000	55,000
Software developer	50,000	50,000	50,000	50,000	50,000
Administrative staff	0	0	0	0	40,000
Inventory staff	0	0	0	0	0

Total salary	2007	2008	2009	2010	2011
Managing director	65,000	65,000	65,000	65,000	65,000
Salesman	55,000	55,000	110,000	110,000	110,000
Software developer	100,000	100,000	100,000	100,000	100,000
Administrative staff	0	0	0	0	40,000
Inventory staff	0	0	0	0	0
Total labour costs	**220,000**	**220,000**	**275,000**	**275,000**	**315,000**

Other fixed costs	2007	2008	2009	2010	2011
Rent, electricity and water	35,000	35,000	35,000	35,000	35,000
Internet	2,500	2,000	2,000	2,000	2,000
Telephone, mobile phone	15,000	10,000	9,000	8,000	5,000
Costs of the car	15,000	15,000	15,000	13,000	7,000
Supplementing of small inventory	17,000	12,000	8,000	7,000	4,000
Administrative service	18,000	15,000	9,000	9,000	0
Inventory service	10,000	6,000	5,000	5,000	4,000
Insurance	16,000	12,000	12,000	11,000	8,000
Advertising	22,000	13,000	10,000	10,000	10,000
Total costs	**150,500**	**120,000**	**105,000**	**100,000**	**75,000**

With all the data from the Balance Sheet and the Income Statement, now we are able to present and analyze the cash flows generated or absorbed by our activity for the first five years. But to do this, we have to calculate before the changes in the Working Capital occurred in this period.

Working Capital 2007-2011

	2007	2008	2009	2010	2011
Debtors					
Primo	0	60,000	122,571	128,700	135,135
Ultimo	60,000	122,571	128,700	135,135	141,891
Change	-60,000	-62,571	-6,129	-6,435	-6,756
Inventories					
Primo	0	10,000	6,000	10,857	26,000
Ultimo	10,000	6,000	10,857	26,000	40,000
Change	-10,000	+4,000	-4,857	-15,143	-14,000
Creditors					
Primo	0	39,286	117,857	125,518	138,070
Ultimo	39,286	117,857	125,518	138,070	164,303
Change	+39,286	+78,571	+7,661	+12,552	+26,233
Total change	**(30,714)**	**20,000**	**(3,325)**	**(9,026)**	**5,477**

In the next page we are going to present the Liquidity Budget for the entire period.

Liquidity Budget 2007-2011

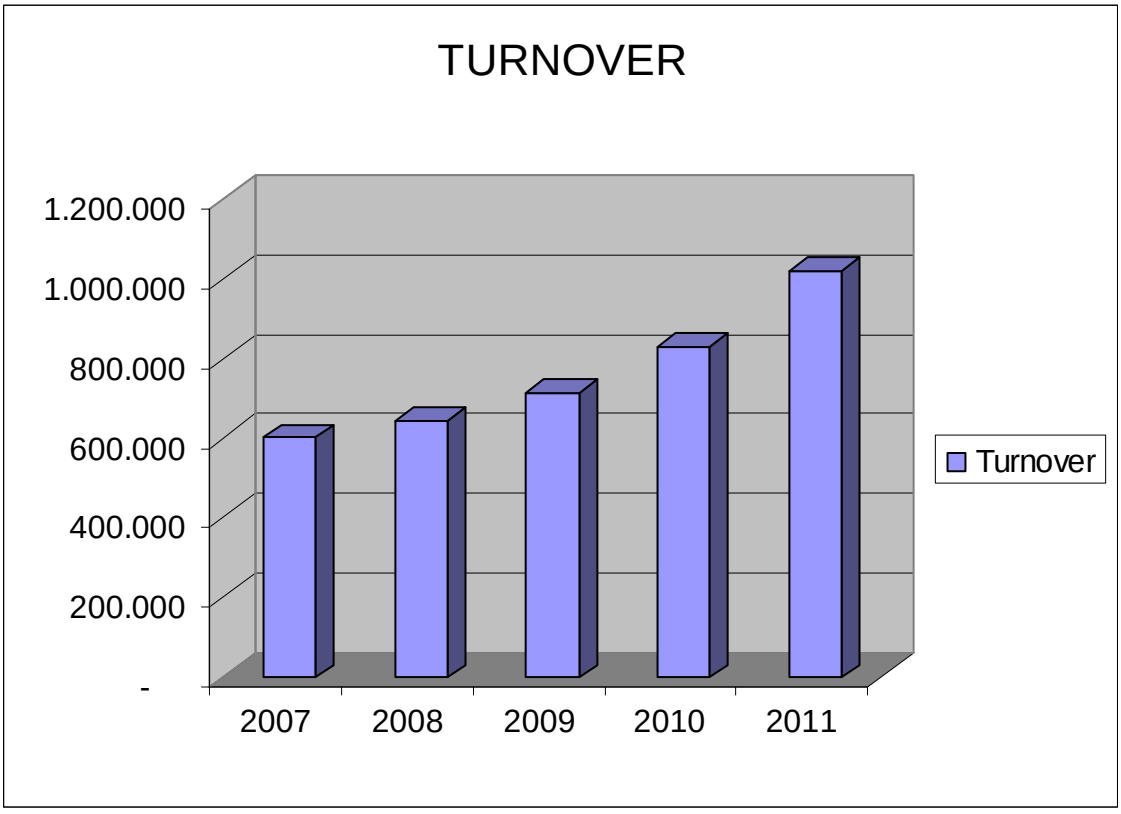
	2007	2008	2009	2010	2011
Liquidity primo	0	(378,214)	(513,464)	(427,169)	(328,906)
Result before depreciations	85,000	122,000	162,620	286,639	454,266
Change in Working capital	(30,714)	20,000	(3,325)	(9,026)	5,477
Change in Fixed assets (investments)	(380,000)	(200,000)	0	(80,000)	0
Payments on loan	(25,000)	(37,500)	(37,500)	(46,500)	(46,500)
Interests	(27,500)	(39,750)	(35,500)	(52,850)	(47,520)
Taxes	0	0	0	0	0
Liquidity ultimo	**(378,214)**	**(513,464)**	**(427,169)**	**(328,906)**	**37,087**

8.4Analysis of budgets

With all the figures concerning the economical and financial situation for the first five years, now we are going to analyze if the company will reach an equilibrium and if the business will be profitable.
To do this, we need to:

- analyze the trend of the sales in term of turnover and profit margin;
- check if the company will meet the objectives for 2011 in term of Return on Investments and Return on Sales;
- analyze the trend in the EBIT and in the net profit, compared with the turnover;
- eventually check if the business is profitable under a financial point of view by analyzing the trend in the cash flows, compared with the turnover.

I. Analysis of the sales in term of turnover and profit margin



From the graph above we can see that the revenues are growing in the years, so the trend is an increasing one, with a total growth from 2007 to 2011 of around 69%.
This increase will happens due to our penetration strategy in the Danish market, with a larger number of medium and big companies asking for our products.

After this, we are going to calculate the Profit margin for the entire period, trying to understand in which percentage our revenues will generate profit and therefore if our turnover will cover the operative costs.
The profit margin is calculated dividing the Earning Before Interests and Taxes by the total Revenues of the year. Therefore:

	2007	2008	2009	2010	2011
EBIT	9,000	22,000	42,620	76,639	144,266
REVENUES	600,000	642,000	712,620	826,639	1,016,766
PROFIT MARGIN	**1.5%**	**3.43%**	**5.98%**	**9.27%**	**14.19%**

From the figures above, we can state that the trend of the Profit margin is a positive one. As a matter of fact, the Return on Sales of our company will be only 1.5% in the first year, but in 2011, of the total amount of revenues, around 85% will be needed to cover the operative costs while about 15% will be transformed in profit.
Consequently, we are in the position to say that, if our company takes this data not merely like "numbers" but like a sort of benchmark or goal, then the situation in term of sales, revenues and return on sales will be good and will improve year by year.

II. Analysis of the respect of the objectives stated at the beginning of the process of budgeting

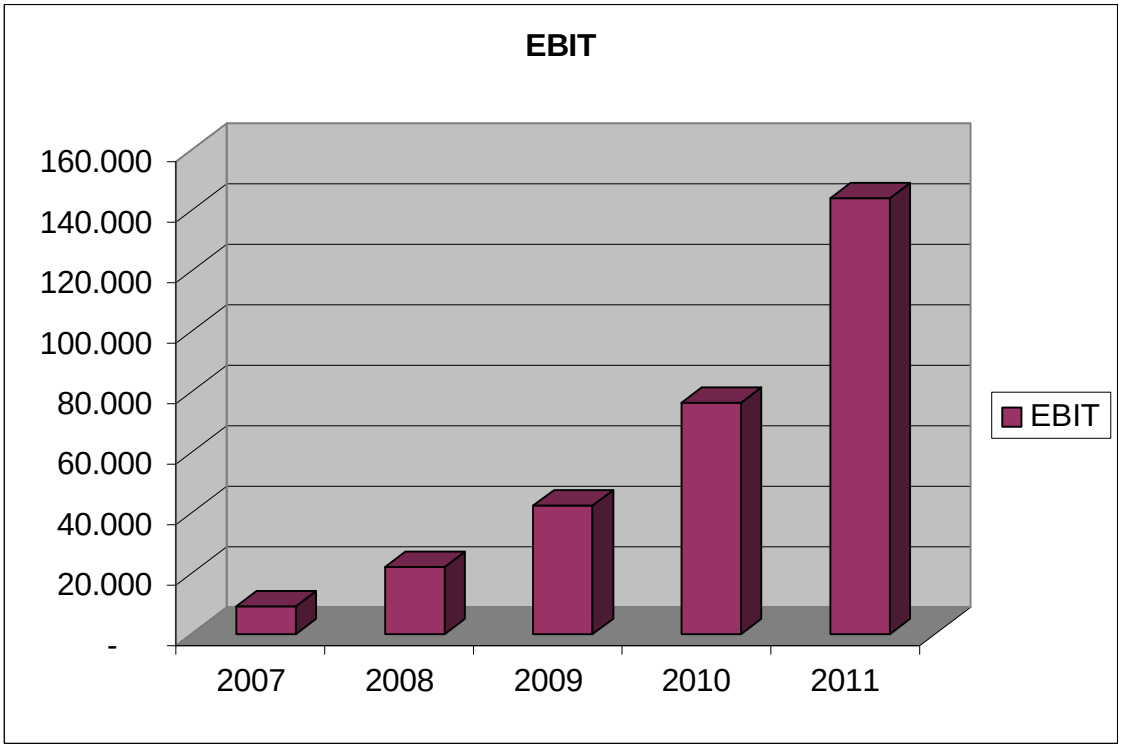
After the process of budgeting we are in the position to compare the objectives stated at the beginning with the results obtained, not forgetting that this results are not real but they are forecasted results.

	ROI	**ROS**
Objectives	13%	15%
Results	16.5%	14.19%

We can see that our objective in term of Return on Investments will be reached in a long-term perspective, with an higher percentage than what we stated at the beginning.
On the other hand, our objective in term of Return on Sales will not be reached but only for less than one percentage point.
Therefore the global situation at the end of the year 2011 should be judged as a positive one.

III. Analysis of the economical profitability of the company

Concerning the profitability of the company, first of all we are going to present the results of the Earning Before Interests and Taxes, that represents the ability of the company to generate profit from its operative activity, without considering the "financial" activity, linked with the payment of interests to the banks and the payment of taxes to the fiscal authorities.

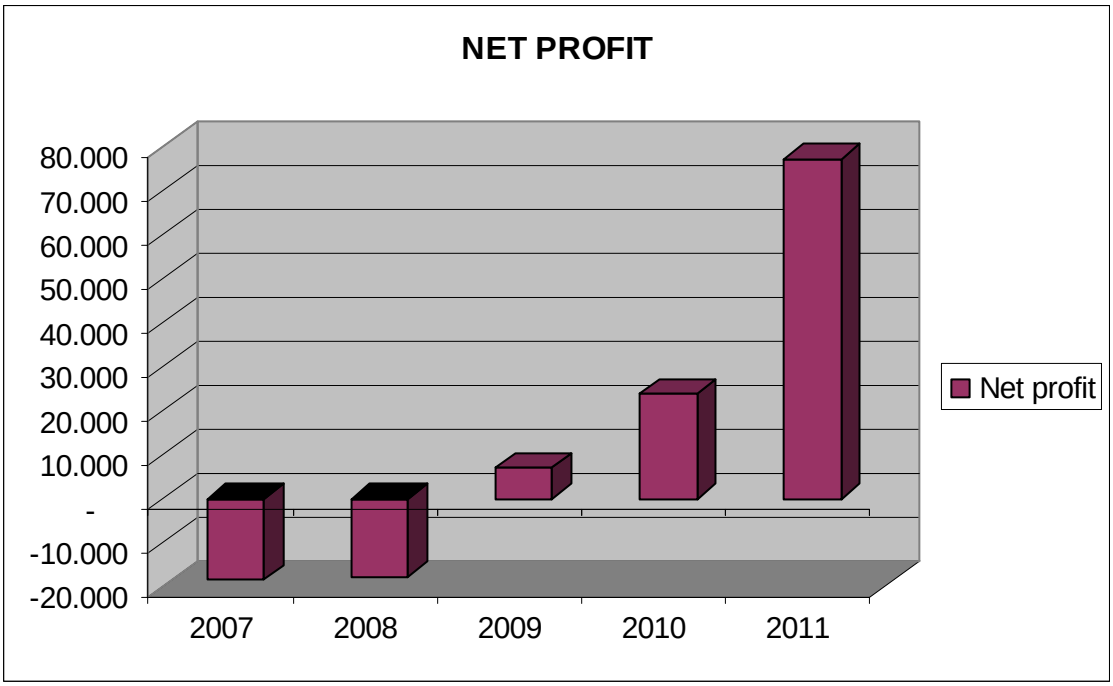


We can see that, like the turnover, the EBIT is increasing during the years. In 2011 the Earning Before Interests and Taxes will be around sixteen times that one of 2007, which means that the company will improve its ability to create profit from its core activity. This ability, expressed by the ROI, is one of the most important information on which the future shareholders will base their investment decisions.

Now we can analyze if, considering the whole activity of our company, our business is going to generate profit or we will have to face losses. For this reason we are going to analyze the trend in the net profit, which is expression of all the management areas, from the operative one to the financial one, including the interests on the mortgage and the taxes required by the fiscal administration.

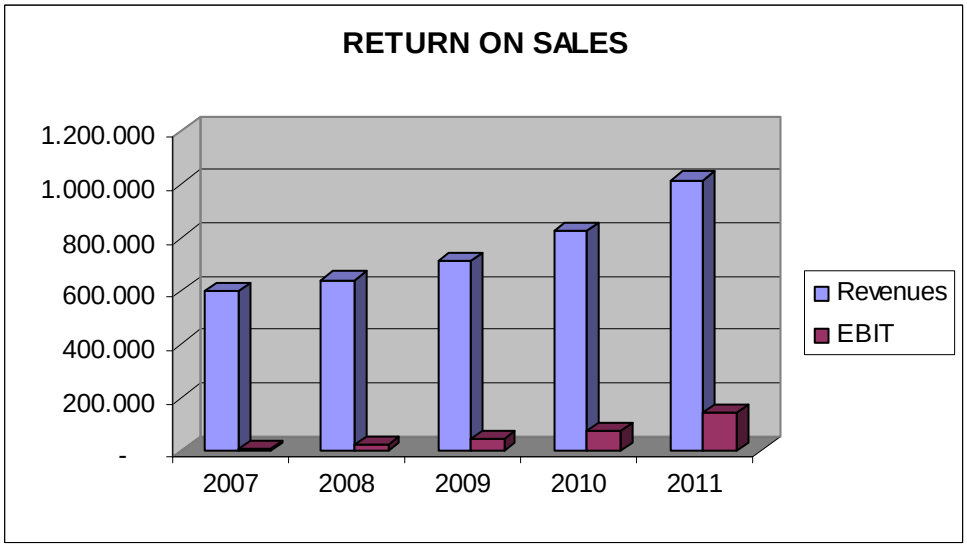
Actually this data, expressed in term of ratio by the Return on Equity, are not considered as important and relevant indicators of the success of a company, at least not at the beginning, because the shareholders are looking at the capacity of the management to generate profit from the core activities of the company. This capacity will be the signal that, in the future, the business will generate profit that will remunerate all the production factor, first of all the capital (money) put by the shareholders, not only in term of economical profit but, especially, in term of financial cash in.

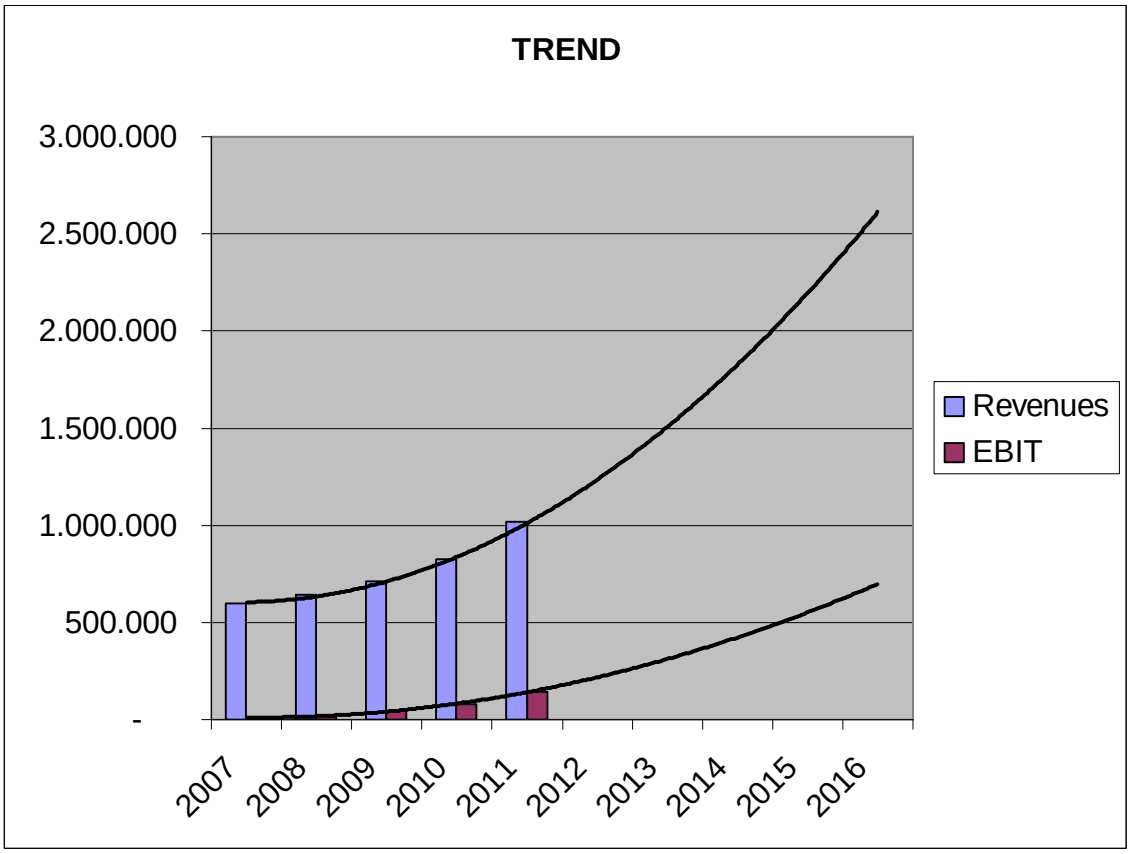
The graph below shows the development of the net profit during the entire period 2007-2011.



Looking at the graph we can state that, even if for the first two years the company will close its activity with a loss, the trend is an increasing one, with a net profit of almost 80,000 euros in 2011. These data have to be considered in a positive way because the management is reaching an economical equilibrium that allows covering all the costs with the net revenues.

Finally we are going to present a graph comparing in one hand the development of the revenues and in the other hand the development of the Earning Before Interests and Taxes, and we are going to present the future trend of both of them in order to analyze if the total revenues will generate larger profits, once covered the operative costs.

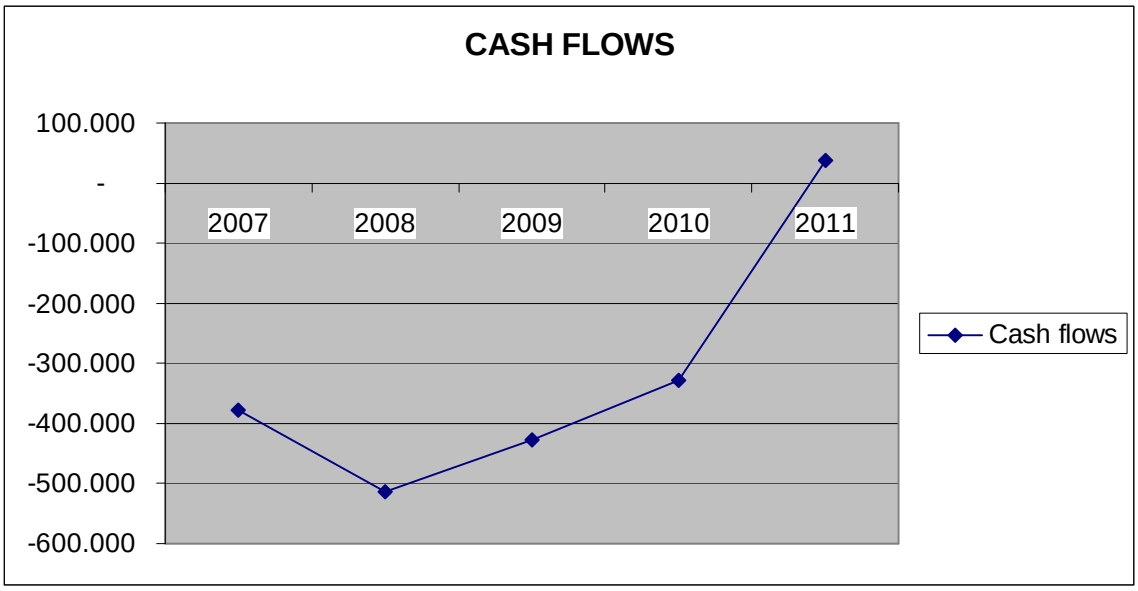


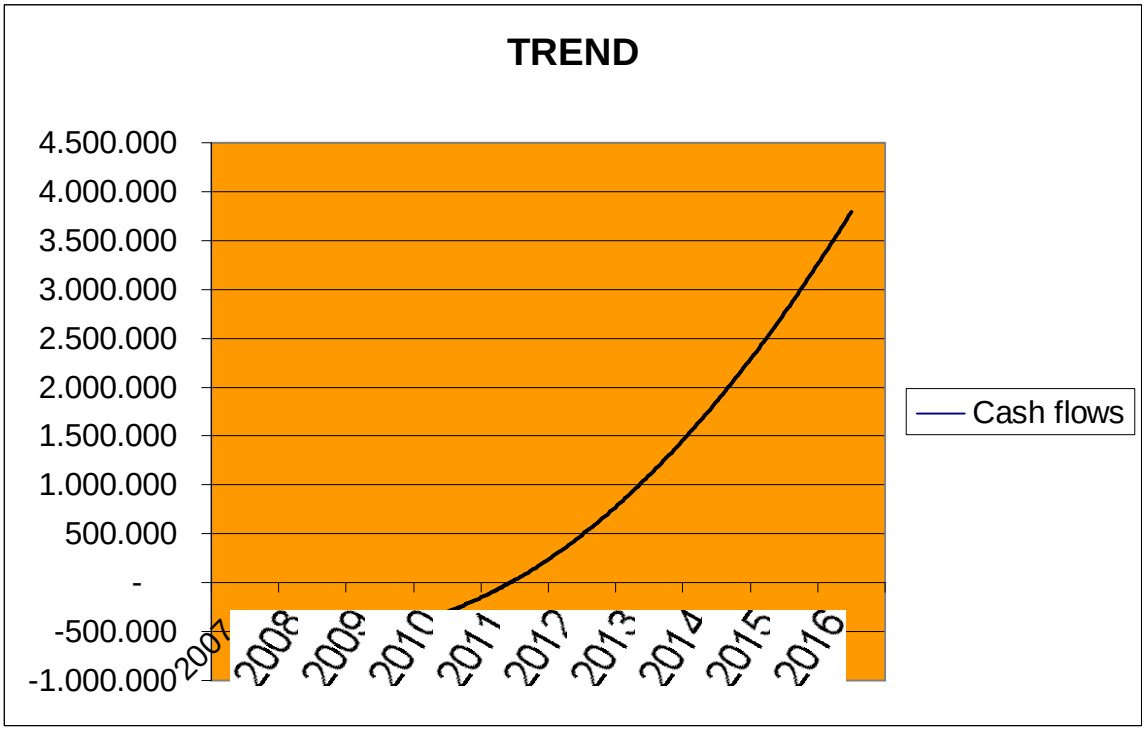


Therefore we can easily state that the trend of both of them in ten years from now is a good one, with the revenues growing very fast, like the profits as well.

IV. Analysis of the financial profitability of the business: cash in – cash out

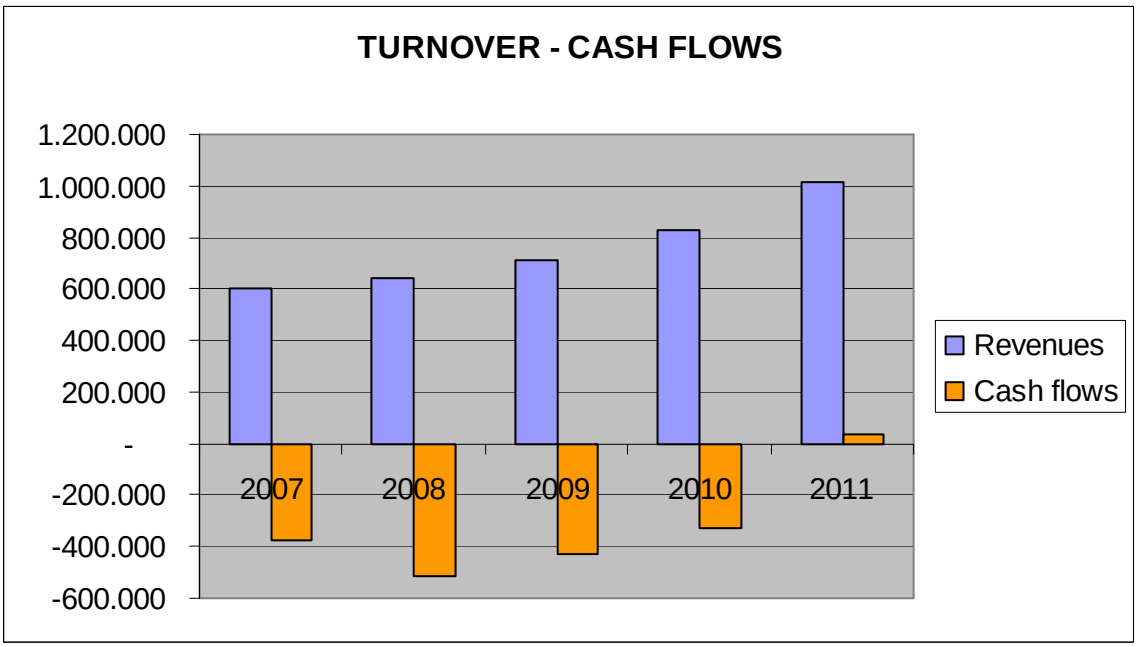
At the end of this analysis, we are able to present the results in term of cash in and cash out generated or absorbed by our activity in the first five years. This results are good indicators of the success of the business, even if we have to consider that for a start-up company is normal to face cash out in the first years, as there is a strong relation between the growth of the business and the need of money to finance this growth.
The graphs below show the development of the cash flows in the years, as well as the trend for the future.





Looking at these graphs, we can say that in the first years our activity will absorb money, because of the need to finance the initial investments and the growth, but in a few years the cash out will be replaced by larger cash in, which will go first of all to the shareholders which invest their money at the beginning and sustain the risk of failure.
As a matter of fact, in the first four years of activity we are going to borrow money from the banks in order to cover the cash out and finance our business.

Finally we are going to present a comparison between the revenues and the cash flows, with the aim to show that a growth in the business, expressed by the growth in the revenues, usually requires money to be financed.



9. Conclusions

After the work is finished, we can see through the final report once again and we can write down some of the main conclusions we have encountered during the work. You can see in the continuation the main conclusions of us, divided regarding the study field.

1. **In the part of the Business & Management students**

Before starting the project we have had some general ideas about how we were going to do the work and how the whole business that we were trying to establish would be working, but after the work is finished, now we can see that many of our expectations were wrong. For us it was the first time to do such a project and we have learned many new things.

As the two students, at least in part, have worked on different topics, now we are going to present separate conclusions for the financial part and for the part of marketing.

Financial part
The financial part has been carried on by Andrea. Before starting the project I was thinking to know more or less how to forecast the economical and financial situation of a start-up company but during these months I understood that this is not easy as there are too many variables to take into consideration. I understood that all the voices of the documents are strictly linked each others and that the figures in the books are not the real ones, saying that when you have to face in the real life all the aspects concerning the forecast to establish a company you understand that the figures are linked with real aspects and real choices and decisions taken by the management. Therefore has been interesting to analyze all the aspects and the relations between voices that, at the end, are relevant for the decision-making process and on which stockholders and stakeholders base their decisions.

I have been working also on the part concerning the establishment of the company and I can say that this part has been really interesting because I have had the opportunity to get information and advices from real institutions and companies here in Denmark and to communicate with them, matter almost impossible in my own country. It has been interesting discover the steps required to establish a company here in Denmark and to realize that the start-up process is easier here if compared with other European countries, even if you have to consider a lot of things and aspects that we usually assume like “given” (appropriate laws, registrations, taxes…). Moreover I discovered some aspects of this country I’ve never been thinking about, such as the flexibility of its labour market, its high investment opportunities and its international environment, viewed under an economical point of view.

Marketing part
After finishing the marketing plan, I have understood that the theory and reality are two totally different things. All the projects I have done until now were only theory, or they had to do with a marketing plan of an actual product which is already in the market.

Creating a marketing plan for a brand new product, from a brand new company was something new. Taking responsibility for the strategy, and trying to take all the right decisions for the marketing plan, needs a lot of work and a lot of thinking.

Since my field of studies is strictly Marketing, I also had some problems understanding the financial part of the project, and furthermore combining the information with the marketing plan.
The project has taught me that taking a decision about the marketing of a product is not an easy job. Trying to analyze everything and to imagine the consequences of each decision is not something that the theory will help you with. It is your opinion and your experience after all this hours in the classroom.

2. In the IT part

We deference two main topics in our conclusions at the end of the project:

The product:
This project started with two students of IT with any idea in the world of programming with SAP systems. We started with small examples and exercises. Looking for information, reading books, the ERP/SAP course, with the help of our supervisor and with hard work, we have arrived to develop more detailed functions and utilities. We have realized that if we would spend more time working in this field and in this way, we could arrive to create really complete, complicate and useful programs, especially business utilities.

SAP:
As we told we were starting this project with no experience on it. It supposed that we were not familiar with this kind of utilities. Utilities that at the beginning seemed strange and difficult but we have realized that they are very usable and useful so; we are very happy about get this knowledge in method of one important company, with good results and extended in a big number of countries, something that can be very useful in our life.

Group working

Working in a group of international student was a new experience only for the Business & Management students, while the IT students already tried this kind of work last semester here in Vitus Bering Denmark.

We had a group composed from three different nationalities and during the work we have discovered how different we actually are, but at the same time how successful do we supplement each other. It has been a great experience and besides studying we have learned a lot of cultural differences and we have improved our friendship.

We think that this project has been a very good experience for us, because we have worked hard and we have seen the real results of our work in our fields of study in which we were not so experts, at least not in a practical way.

10. Appendix

10.1 Human-Computer Interaction Theory

1.2. Human-Computer Interaction

There is currently not agreed definition for most of the terms related with the Human-Computer Interaction. Even though, we will try to form a general idea using some of the definitions you can find through internet.

If we look up in *Wikipedia*[13] we can extract this sum up definition:

HCI is the study of interaction between people (users) and computers. It is an interdisciplinary subject (Figure1), which links computer science with some more fields and has a lot of research.

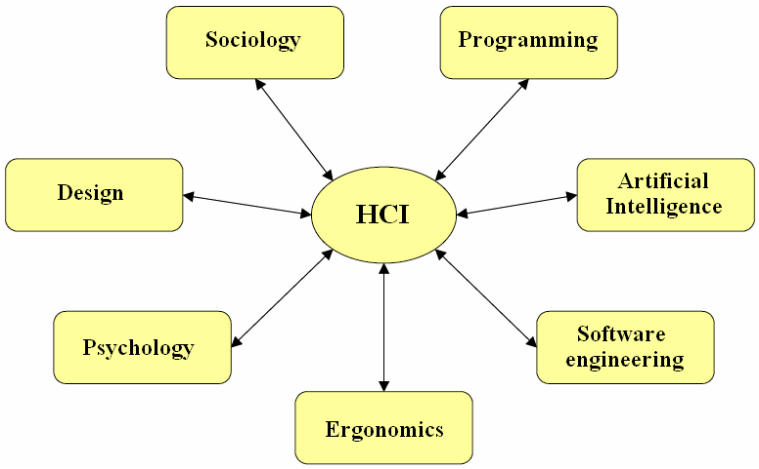


Figure1. HCI is an interdisciplinary subject.

And here we find the ACM description of what HCI is:

"Human-computer interaction is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them."

ACM, *Association for Computer Machinery*, is, possibly, the most important international organization of professionals and researchers interested in all aspects of computers fields. This association has a special working group that is dedicated to the HCI, named SIGCHI, *Special Interest Group in Computer Human Interaction*, which decided to give the Human-Computer Interaction definition above.

[13] http://wikipedia.org

The main point of this discipline is the interaction between one or more users and one or more computers. And here we have to keep in mind that this is not only related with the use of computers when you are at work in front of your computer. It refers also to the use of mobile phones, control panels of planes, and so on.

Once that we have introduced what HCI is, we should describe which are its main goals.

The main objectives of HCI are developing or improving the security, utility, efficiency, effectiveness and usability of systems which have computers. And in order create these interactive systems we need:

1) Comprehend the different factors as physiologic, ergonomic, organizational and social, that determine how people work and use the computers and move this comprehension to
2) Develop tools and techniques that help the designers to reach such a good informatics' systems according to the different activities they were made for, to
3) Achieve an efficient, effectiveness and secure interaction, as an individual point as a group.

Even more, HCI is concerned with:

- methodologies and processes for designing interfaces[14] (i.e., given a task and a class of users, design the best possible interface within given constraints, optimizing for a desired property such as learn ability or efficiency of use)
- methods for implementing interfaces (e.g. software toolkits and libraries; efficient algorithms)
- techniques for evaluating and comparing interfaces
- developing new interfaces and interaction techniques
- developing descriptive and predictive models and theories of interaction

[14] Here, interface defines the communication boundary between the computer and the human. Another nice way to say what interface is could be: the input language of the user, the output language for the computer and an interaction protocol.
"The interface is the place where bits and people meet." Negroponte, "Being Digital".

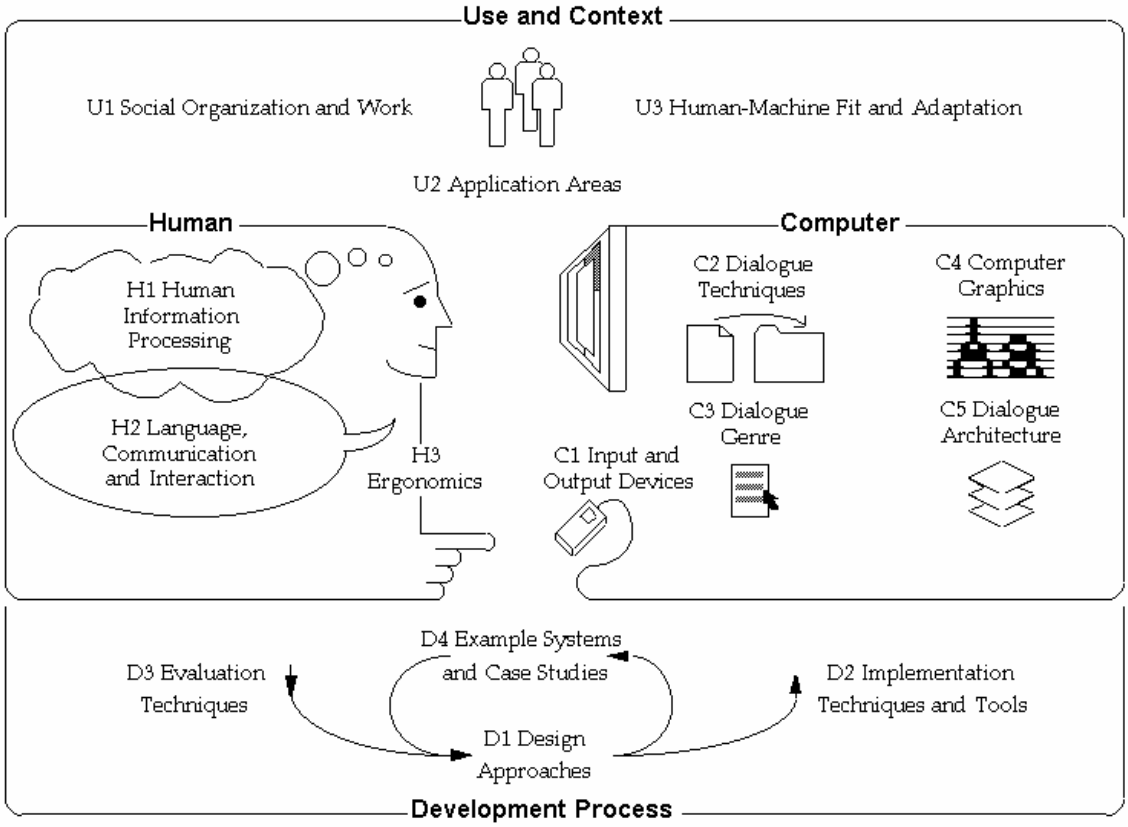


Figure2. Schema of the HCI

Fonts ACM SIGCHI curriculla, 1992, p 6. Web page: http://sigchi.org/cdg/cdg2.html#2_1 and Wikipedia web page: http://en.wikipedia.org/wiki/Human-computer_interaction

2.2. Methodology: User-Centered Design

The UCD is the design philosophy and process in which the needs, wants, and limitations of the end user of an interface or document are given extensive attention at each stage of the design process.

We could also say that it is the correct way to achieve a usable and accessible interface for the user. And this model is based on the next four points (Figure3):

- Structured activities form the requirements of usability analysis
- An explicit set of activities of usability goals
- Support activities to come close to a structured user's interface design.
- Evaluation activities of the usability objects by means of iterations on the design.

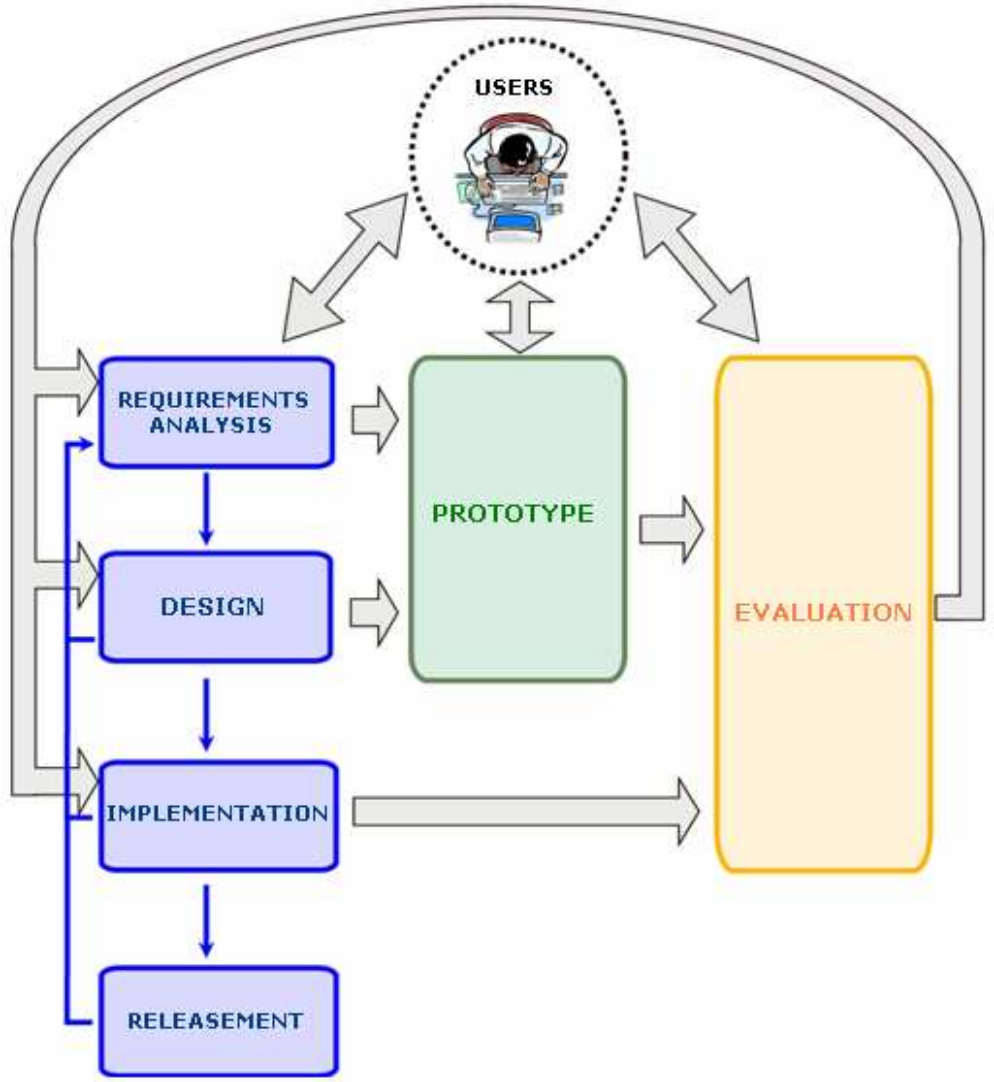


Figure3. It shows the usability and accessibility process.

The schema above shows the different phases on which you can divide the UCD method. It gives a clear an ordered classification of the steps that we need and it distinguishes clearly the three main basic blocks of this method:

- Classic Software engineering (blue column) – analysis, design, implementation, and installation.
- Prototyping (green column)
- Evaluation (orange column)

The schema also shows that the user is the center of the process during all cycle and the arrows give us the idea of iteration between the different activities and the user.

So, to design our product we will use the user-centered design. We will follow the ISO 130407 [ISO99], which constitutes a guide to reach the development of usable interactive systems having in mind the UCD method during the cycle of the development.
This standard describes the next four activities you need from an:

- Understanding and making the specification on the use context.
- Specification of the requirements of the users.
- Simple and natural dialog.
- Producing design solutions.

And the simple iteration of these four activities is illustrated in the next figure (Figure4):

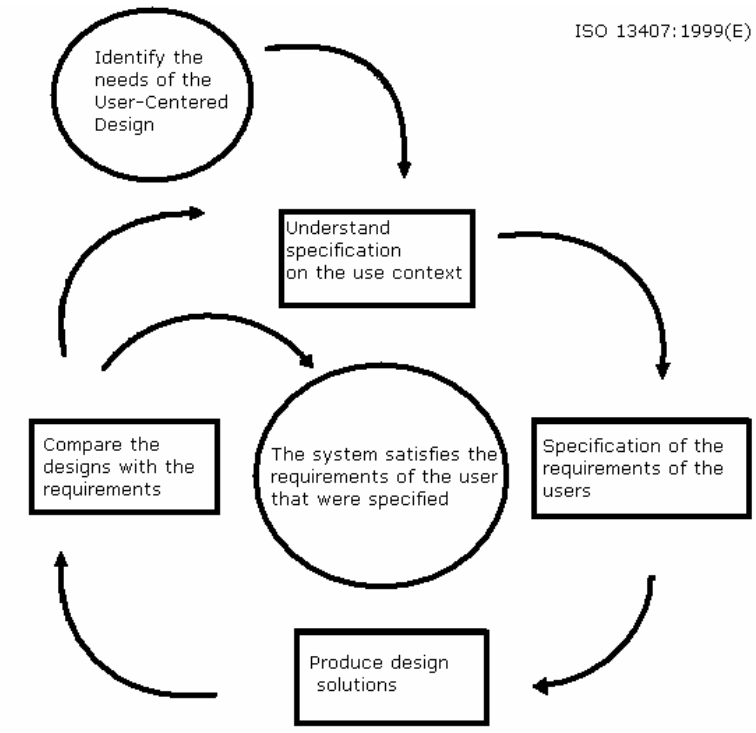


Figure4

Furthermore some of the goals of the UCD are:

- Design for the users and their activities.
- Consistence.
- Simple and natural dialog.
- Low down user's mental effort.

- Provide good navigation.
- Let the user control the navigation.
- Present the information on a clear way.
- Create a friendly system.
- Low down the number of errors.

Finally, we will describe all the different groups showed on Figure3 on the next point How will we work?

http://en.wikipedia.org/wiki/User-centered_design
http://griho.udl.es/ipo/pdf/01Introd.pdf

Usability

To make an interactive system accomplish its goals it has to be *usable* and, furthermore, due to the global use of computers, it has to be *accessible* to the most part of the human population.

Then we can define usability as the measurement in which one product can be used for some determined users to reach the specific goals with effectiveness, efficiency and satisfaction in a specific use context.

Why is it important?

With the usability we can get:

- production cost reduction
- maintenance and support cost reduction
- use cost reduction
- better product quality

And here we have some of the basic principles of the usability:

- **Easy to learn**
  - It must allow new users to understand how to use an interactive system and reach the maximum level of knowledge and use.

- **Flexible**
  - An interactive system will be flexible when the user and the system can exchange information in many different ways.

- **Solid**
  - It is solid when it allows us to realize the goals without problems.

- **Predictable**
  - The knowledge acquired during all the previous interactions will be enough to determine the result of futures interactions.

- **Synthesizable**
  - It lets us know the status of the previous interactions

- **Familiar**
  - If it exists some correlation between the knowledge of the user and the knowledge that you need to make an effective interaction.

- **Consistence**
  - In all the applications the actions should be the same so that the user does not get confused.

- **Easy to recover**
  - How easy is for the user to correct one action once that the mistake is recognized.

- **Delay**
  - It is the time that the application needs to show status changes to the user. It is important to keep this time as low as possible.

- **Low cognitive work**
  - Users should trust more on recognizing than in their memories. They should not remember shortcuts or long and complicated codes.

But, why should we spend some time dealing with the usability of the product?

If our final product did not take care of the user requests and we did not pay attention to the utilities of the product, people will not be able to understand it and they will not want to use it. This will end with really low market and benefits.

On the other hand, if we take care of the usability of the product since the beginning we will get the benefits of these four points that described before why usability was important.

http://en.wikipedia.org/wiki/Usability

http://griho.udl.es/ipo/pdf/01Introd.pdf

Accessibility

Accessibility is a general term used to describe the degree to which a system is usable by as many people as possible. It is related with the universal design:

Universal design is the process of design products that will be usable by as many people as possible, working in the biggest range of situations, and that is commercially practicable.

We also find another definition:
"The design of products and environment has to be usable by as many people as possible without the necessity of being adapted or have a special design."[15]

Why is it important?

With the accessibility we open the doors of our product to everybody and what is more important more people will be able to use it. As most of us do not have any problem with accessibility we never take care of those who have, and we forget that there is quite many people with color-blindness problems, so now that we have the opportunity to help them and make things easier we should take advantage and improve use of the applications.

Moreover, here we have the main principles of the universal design:

1. Equitable use
2. Flexibility in use
3. Simple and intuitive
4. Perceptible information
5. Tolerance for error
6. Low physical effort
7. Size and space for approach and use

How can we know if the application is accessible?

Obviously the best way to know is to have some user with incapacities to try our application, but as we cannot do it we have a small list here of things to have in mind, and some web that checks it on-line.

- Recommendation list. Every operative system has a list of recommendations and guidelines for accessible software design.
- Using the keyboard. It should be possible to go through the interface using the keyboard. Even more, all the images and actions have to be well described and we have to check if there are some actions too difficult to be done with one hand or one finger.
- Fonts. Try changing the font type and see if it will be readable in another operative system. Check also the size of the font.

Finally the web page to check the accessibility on-line:

http://aprompt.snow.utoronto.ca/

[15] CONNELL et al. *What is universal design?* (http://www.design.ncsu.edu:8120/cud/univ_design/princ_overview.htm). NC State University, 1997

11. Bibliography

Business & Management part:

- Books:
"Management and Cost Accounting" by Colin Drury – THOMSON 2007

"Invest in Denmark" by the Ministry of Foreign Affairs of Denmark – 2007

"Establishing a Business in Denmark" by Ernst & Young – 2005

"Facilitating Corporate Financial Services" by Forum Group – 2001

"Enabling Better Management Decisions" by SAS White Paper – 2005

"A framework for Marketing Management" 3. edition by Philip Kotler and Keller.

- Web sites:
www.investindk.dk

www.maqs.com

www.cbs.dk

www.kpmg.com

www.bravenewworld.com

www.accenture.com

www.microsoft.com

www.sap.com

www.workindenmark.dk

www.hlb.dk

www.vib.be

www.nordea.com

www.govexec.com

www.wikipedia.org
www.knowthis.com

www.marketingprinciples.com

www.denmark.dk

www.marketingteacher.com

www.quickmba.com

IT part:

- We have used the following books to be able to do this project:
"SAP Web Application Server" by Frédéric Heinemann and Christian Rau.

"Programming the SAP R/3 System" second edition by Bernd Matzke.

"SAP´s R/3 Applications" by Rüdiger Kretschmer and Wolfgang Weiss.

"ABAP Objects" by Horst Keller and SAscha Krüger.

- We have used the following web pages to be able to do this project:
ACM: Association for Computing Machinery, the world's first educational and scientific computing society. Visited on the World Wide Web:
http://www.acm.org/

Sigchi: ACM's special interest group on computer-interaction. Visited on the World Wide Web:
http://sigchi.org/

Book with information about hci. Visited on the World Wide Web:
http://sigchi.org/cdg/cdg2.html.

Design acces information. Visited on the World Wide Web:
http://www.ndsu.edu/ndsu/cwilloug/faculty_resource_room/graphicdesign.html

Information about accessibility. Visited on the World Wide Web:
http://en.wikipedia.org/wiki/Accessibility
http://en.wikipedia.org/wiki/Universal_design
http://www.design.ncsu.edu/cud/about_ud/udprinciples.htm
http://www.accessibility101.org.uk/tips/41.htm
http://www.w3.org/TR/WCAG20
Fast Facts for Faculty http://telr.osu.edu/dpg/fastfact/webcontent.html

Accessibility test. Visited on the World Wide Web:

http://aprompt.snow.utoronto.ca/

Color blind information. Visited on the World Wide Web:
http://trace.wisc.edu/world/web/
http://colorlab.wickline.org/colorblind/colorlab/

ISO information. Visited on the World Wide Web:
www.iso.org

BSP information. Visited on the World Wide Web:
https://www.sdn.sap.com/irj/sdn/go/portal/prtroot/docs/library/uuid/7680d690-0201-0010-dda9-c3223e4ad235

SAP. Visited on the World Wide Web:
www.sap.com

Getting More Familiar With the ABAP Dictionary. Visited on the World Wide Web:
https://www.sdn.sap.com/irj/sdn/weblogs?blog=/pub/wlg/6540

SAP Network Wiki. Visited on the World Wide Web:
https://www.sdn.sap.com/irj/sdn/wiki?path=/display/HOME/ABAP+Development

Application Server Code Samples. Visited on the World Wide Web:
https://www.sdn.sap.com/irj/sdn/search?SearchVisible=false&SelectedCustomProps=sdn_product(value=Web%20Application%20Server),resourcetype(value=%20sdn_code_sample)&SearchPluginName=sdn_library

Other interesting links:
https://www.sdn.sap.com/irj/sdn/go/portal/prtroot/docs/library/uuid/40028724-3568-2910-398b-981ae3daf40c

http://help.sap.com/saphelp_nw04/helpdata/en/e5/4d3508c11411d4ad310000e83539c3/frameset.htm

http://help.sap.com/saphelp_nw04/helpdata/en/7a/b86041397211d5992200508b6b8b11/content.htm

http://help.sap.com/saphelp_nw04/helpdata/en/78/9852aec06b11d4ad310000e83539c3/content.htm

12. PROCESS REPORT (IT)

Diary of Meetings

March

Friday 2nd – First meeting

We had an introduction about ourselves and our business partners, we talked about the main idea of the project and the supervisor gave us some examples for the application.
We started with the division of sub-problems and planning.

Agreement: next Wednesday 7 March 2007, students will have the project description and planning for the next semester and the supervisor will have the computer ready to start installing.

Wednesday 7th – Discussing the main topic

We were discussing to find a topic for the project so that everybody agreed with.
The first good idea we found was the "*tickets selling via webpage"*, and we started to divide the work and make plans to go to the NY Theatre of Horsens and to another company to know how to create a company.

Agreement: for next Wednesday 14 March 2007, students will have gone to the NY Theatre and the Business Company to know how everything from the ticket system works and the agenda for the next meeting. The teacher will have the computer ready to use.

Wednesday 14th – Changing the topic

Before the meeting we were discussing if the ticket system creating a new company was really the topic that we were looking for because we didn't want to make a new company, and the IT students had already made a similar program. So at the end we decided that it was not a good idea and we were asking for help about the topic with our supervisor.
We received some more examples than the e-shop and the tickets, as the project management or the weight control for boats.
Even though we are not completely sure about what are we going to do, and we should decide soon because we are not following the schedule, this time the meeting was much better than the ones we used to have before.

Agreement: the supervisor had some problems with the computer that we were supposed to use (it didn't have processor neither hard-disk) so he said that he would apply for a new computer and we will use his old one. The students, on the other hand, will have the topic decided and the draft for the project description done (specially the business part). Furthermore, we will prepare an agenda and we will send it to the supervisor before the meeting.

Deadline: Friday 16th of March.

April

Monday 30th – Giving the computer

After long time without having a meeting with the supervisor we finally manage to meet all together. It was quite short but useful, and this is what we did:
Andrea presented the steps to create our company and Myrto got some advices and questions to start with the marketing.
On the other hand the IT students received the computer to start installing the tools to create the web application.

Agreement: for next Thursday the software has to be installed.

May

Tuesday 29th – Check point and questions

Today we had another check point to see how it is going with the project.
First the business students asked for some help with their part. They wanted to know if they had to sell a complete application or just what the IT students were creating. They got the answer and they decided that the market would be Germany.
Afterwards the IT started with their questions and we agreed that we should do something related with Human-Computer Interaction.

Agreement: we will meet next Thursday and we will have more things to do and he will check the work that we will do.

Thursday 31st – Check point and questions

Now that we are reaching the last week of the project we are having more check points to see how much we work. This time the questions were focused on the competitors and some of the theoretical part of the IT studies.
Today the business students changed their minds and the market now is Denmark. And on the other hand, the IT students got more work to do about HCI.

Agreement: we will meet next Monday with almost everything finished and some of us will send our work to the supervisor so that he can see if the schema that we did is good or not.

June

Monday 4th – Final sprint

Today we revised our job and the business part is almost finished. On the other hand the IT part is not yet done and the supervisor told us that we should to a *search help* option to make it easier to the users to find their projects.
The supervisor said also that everything was more or less ok and that he could not read anything before the presentation.

Agreement: IT students will have a new meeting tomorrow 5th to finish the questions about integrating the SAP part to the web page.

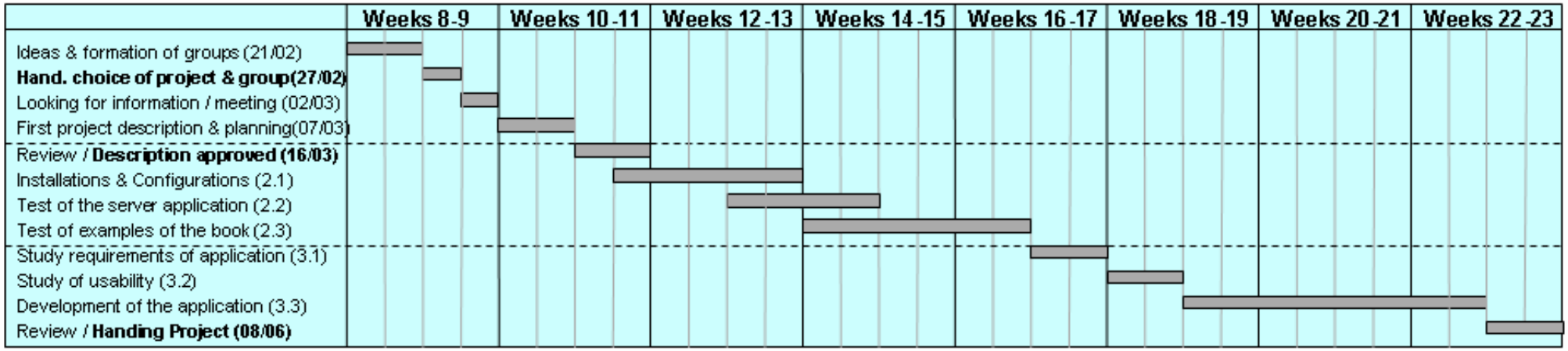
Tuesday 5th – Last meeting

Today the IT students had the last meeting with the supervisor. It was to see how the web page was going and to solve the last problems. This time we knew exactly what are we supposed to implement.
We were solving some of our questions and we changed the day of printing.

Agreement: All work must be finished by Friday and if we have some questions we can ask him via mail.

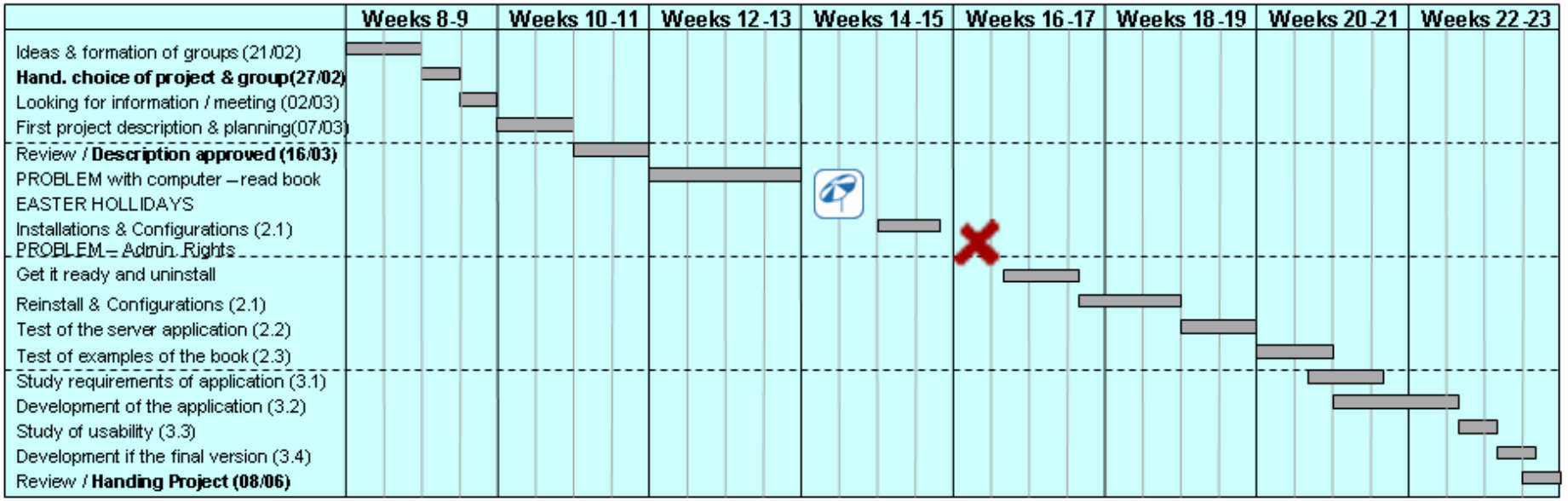
Project Spring 2007

First Planning / Grant Diagram



Project Spring 2007

Final Execution / Grant Diagram



12.4 Setting up the Web Application Server 6.20

We have used the software and information of the book “SAP Web Application Server” that the supervisor has given us as the main tool to start to install and get all our system working.

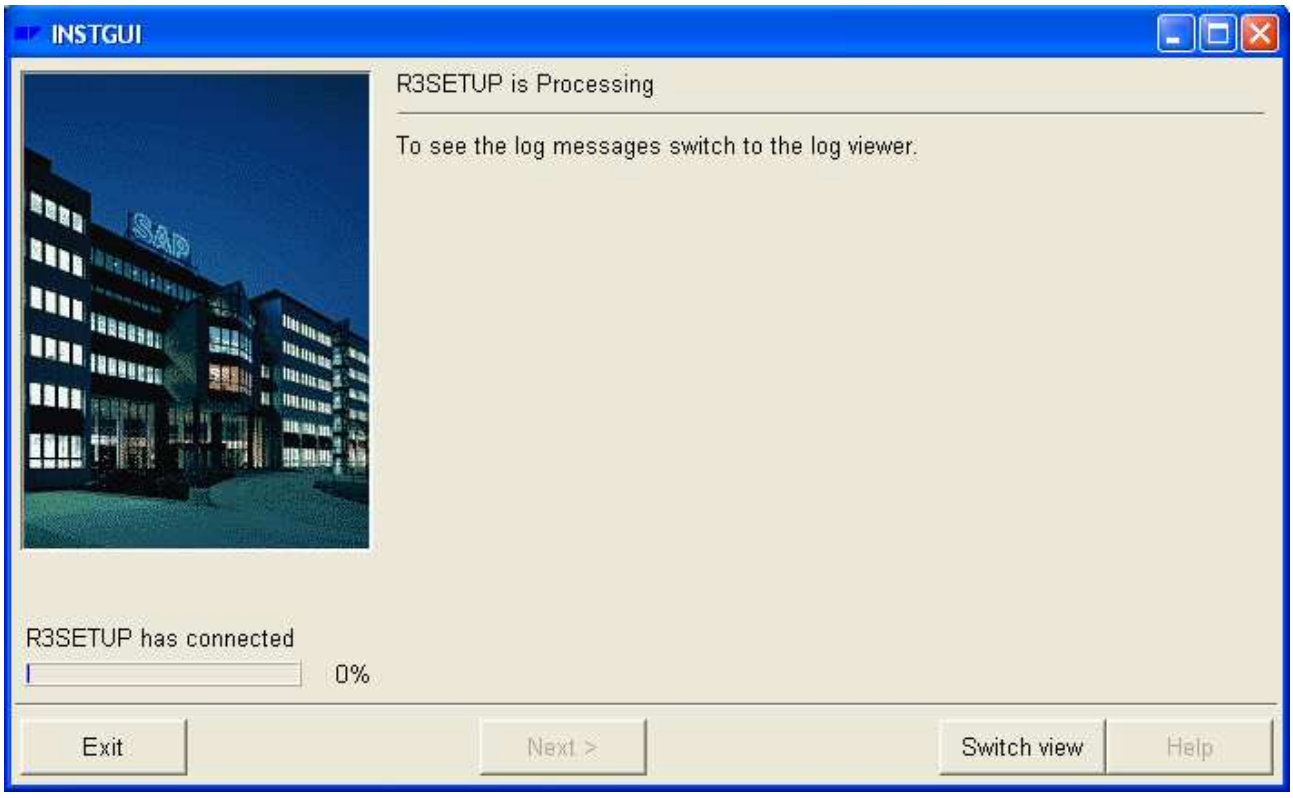
12.4.1 System requirements

We start checking the requirements that the system ask to our computer. The first of them is that we must log on our computer as administrator. We did not have this permit, so we went with our supervisor to the IT service to change it.

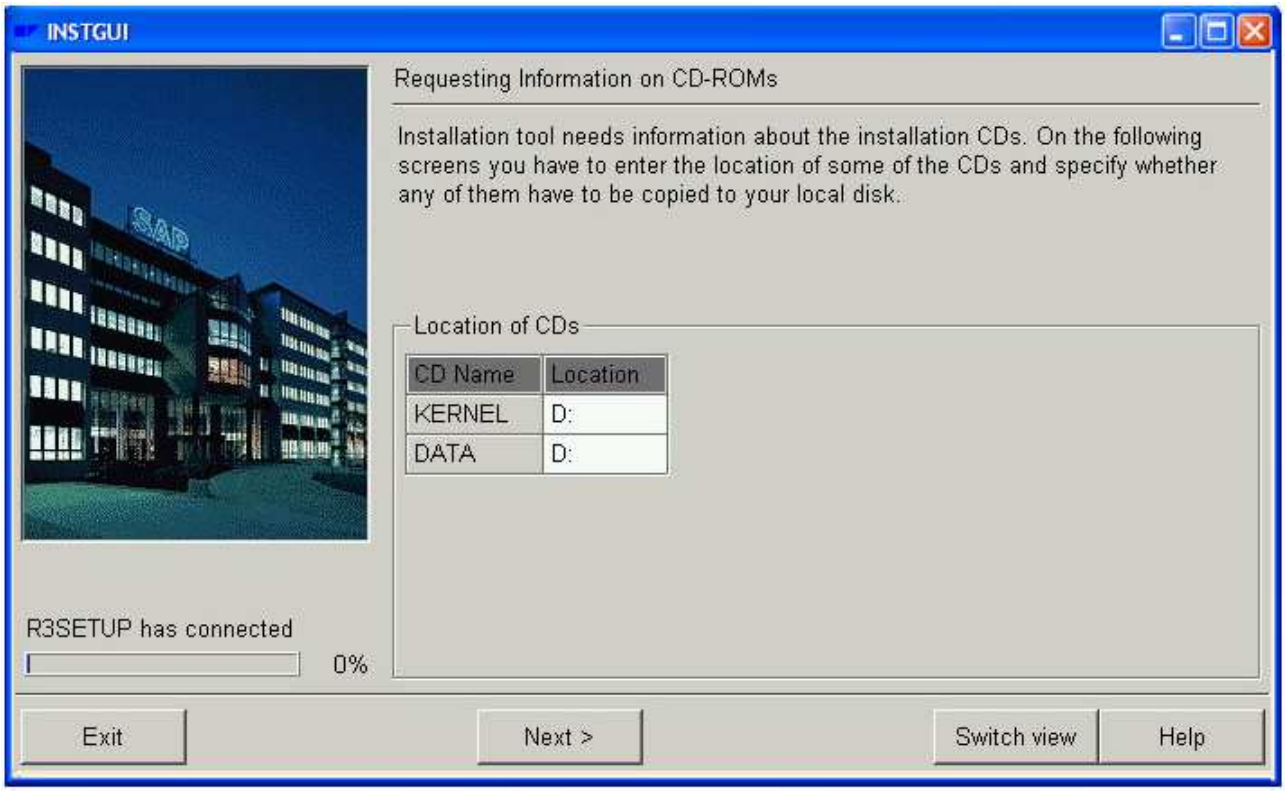
Then mainly we have checked carefully that we do not have any SAP database, C:\Windows\system\32\drivers\etc\services does not use port 3600 and our hostname must not be longer than 13 characters.

12.4.2 Installation

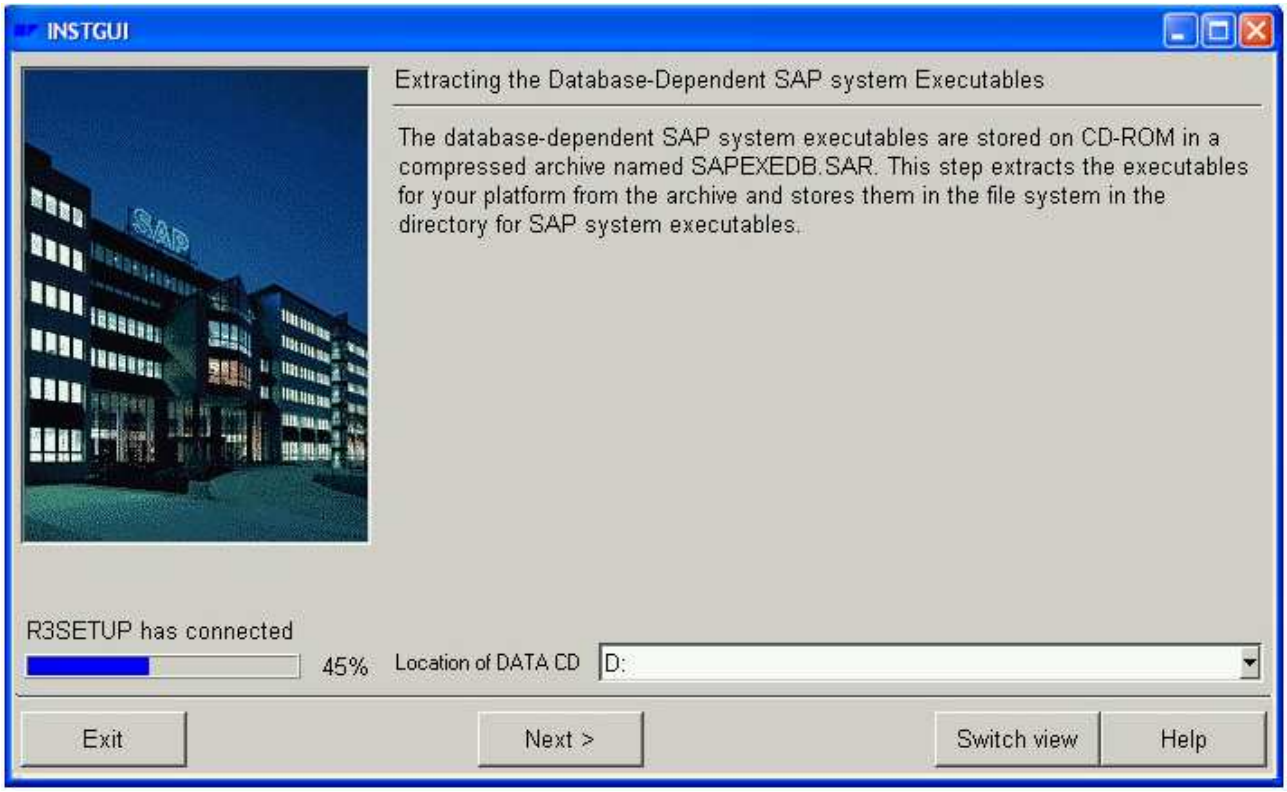
SAP Web Application Server 6.20 and SAP DB Installation:
Once that is inserted the first CD we follow the instructions of installation.



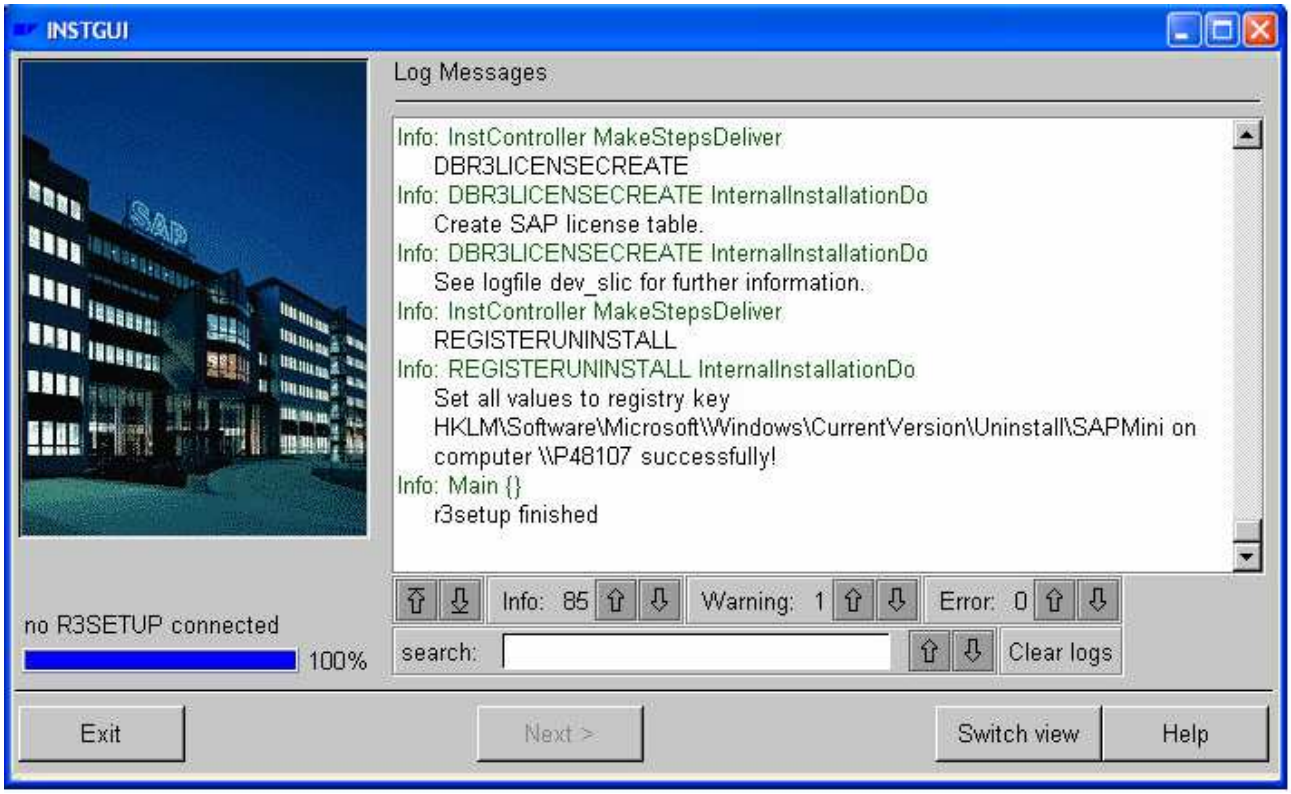
Initial screen.



Screen to confirm the path of the CDs.

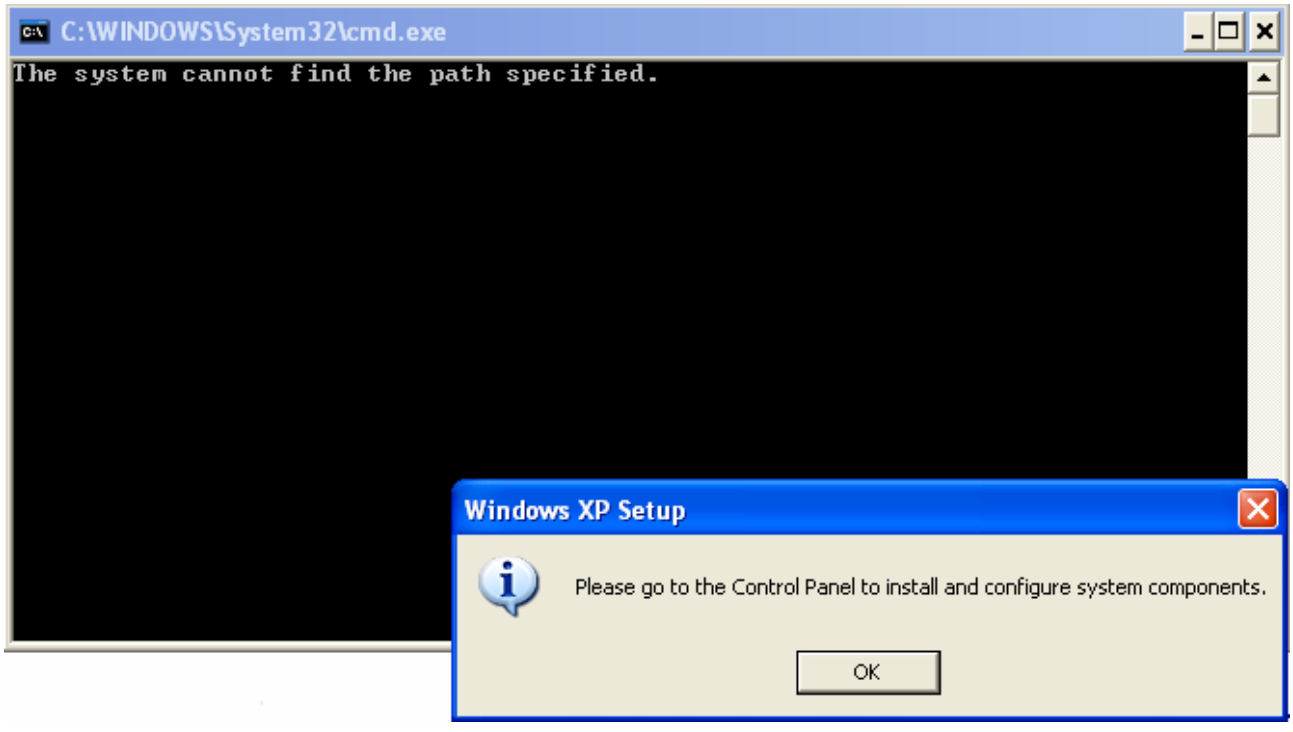


Screen of change of CDs.

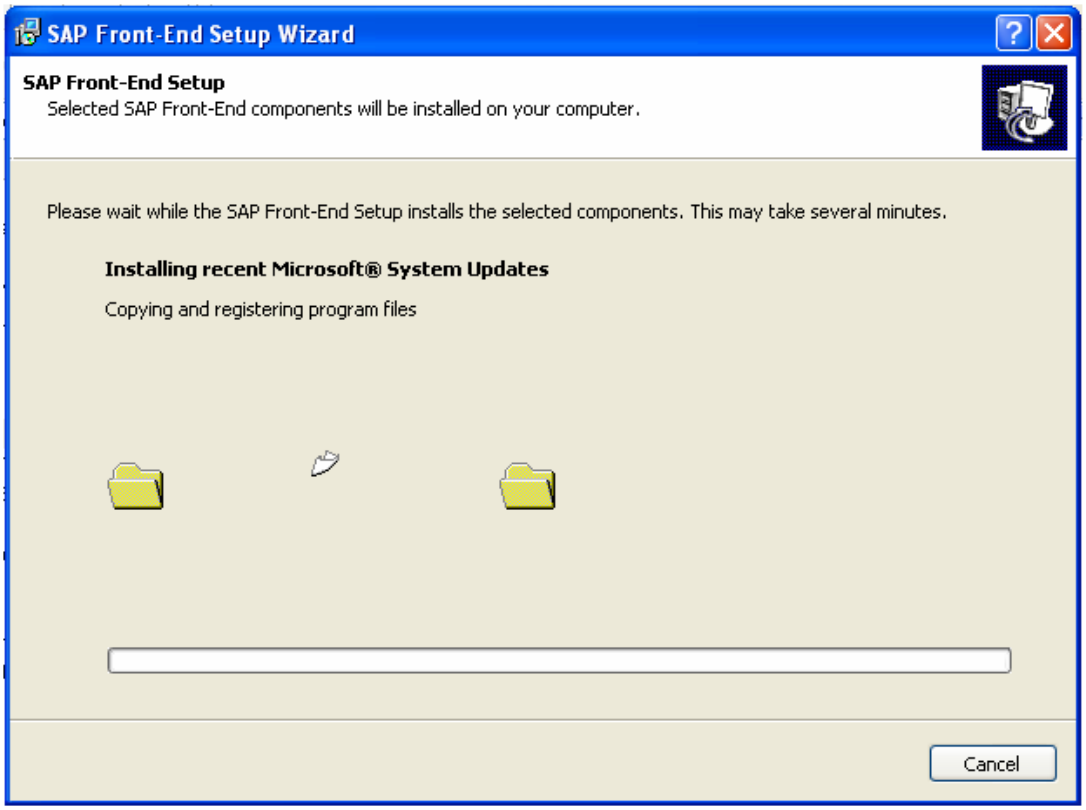


Finished installation screen.

Front-end Installation:
We do not have any SAPGui so we do not have any problem to start to install it. We have had the following error:

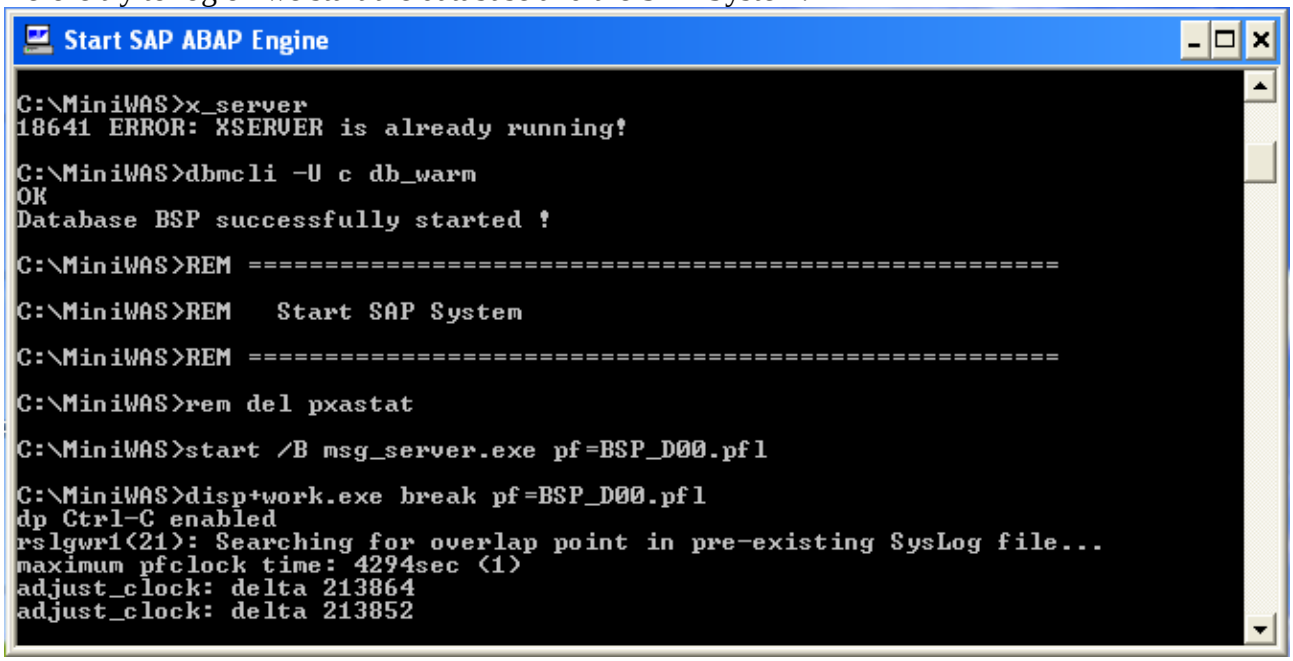


We have followed the alternative of go to the CD and execute MINIGUI\setup.exe. We have followed the instructions and we don't have had any problem.

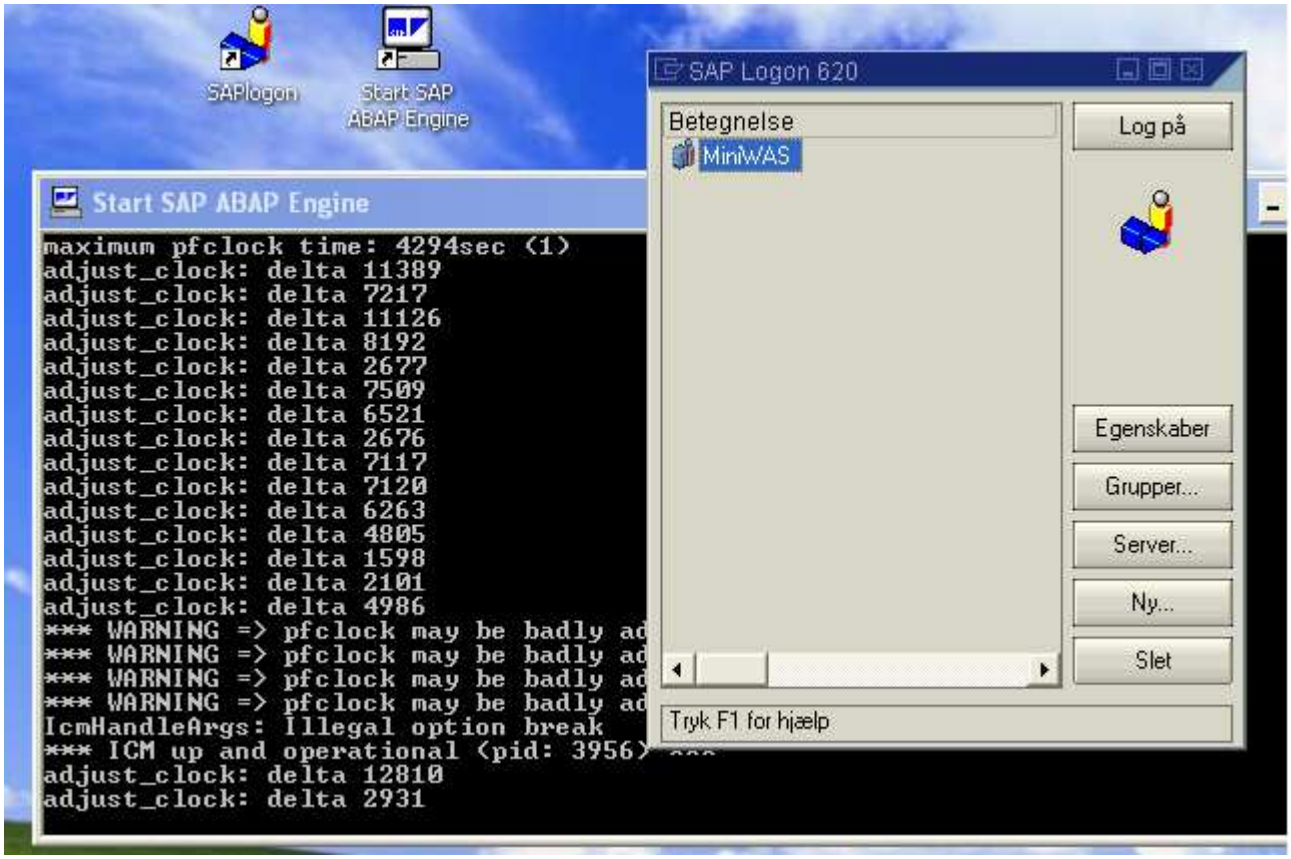


12.4.3 Setting up SAP logon and calling the SAPGui

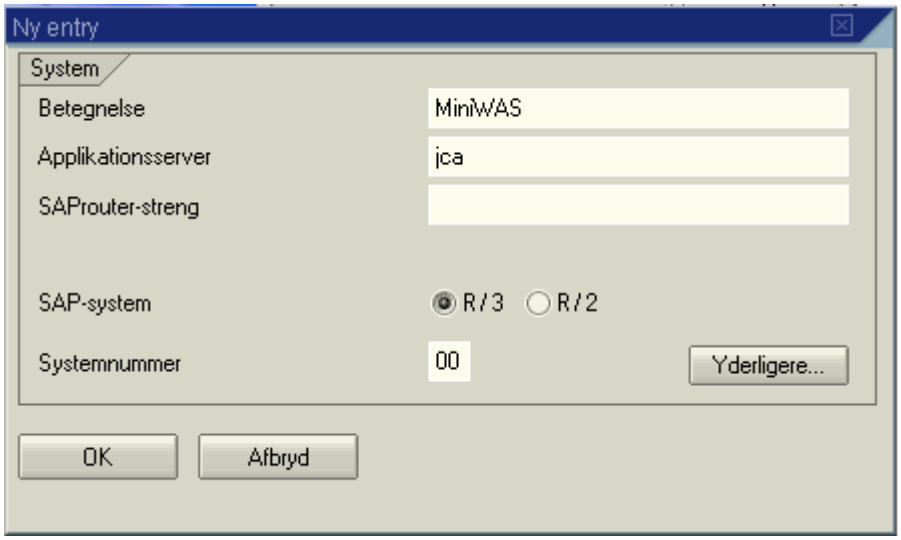
Before try to log on we start the database and the SAP System.



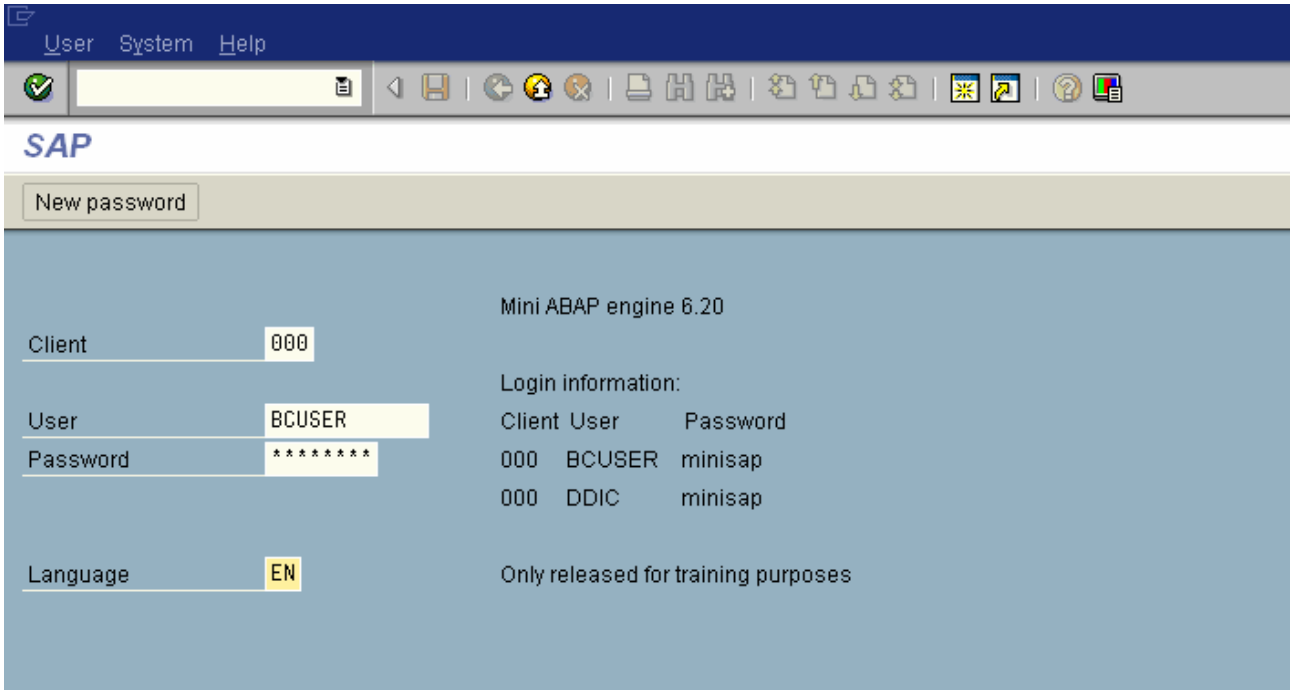
After it we enter in the menu to log on:



We select new and we fill with the name of our computer:



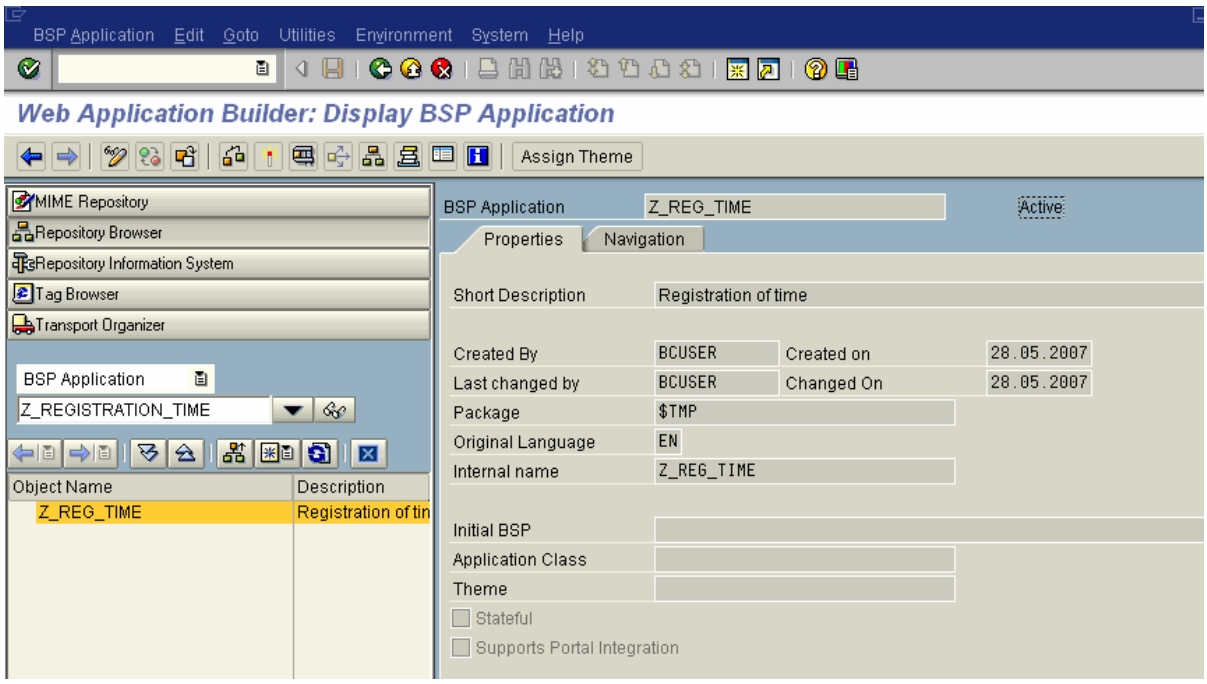
After introduce our username and password we can enter in our SAP system:



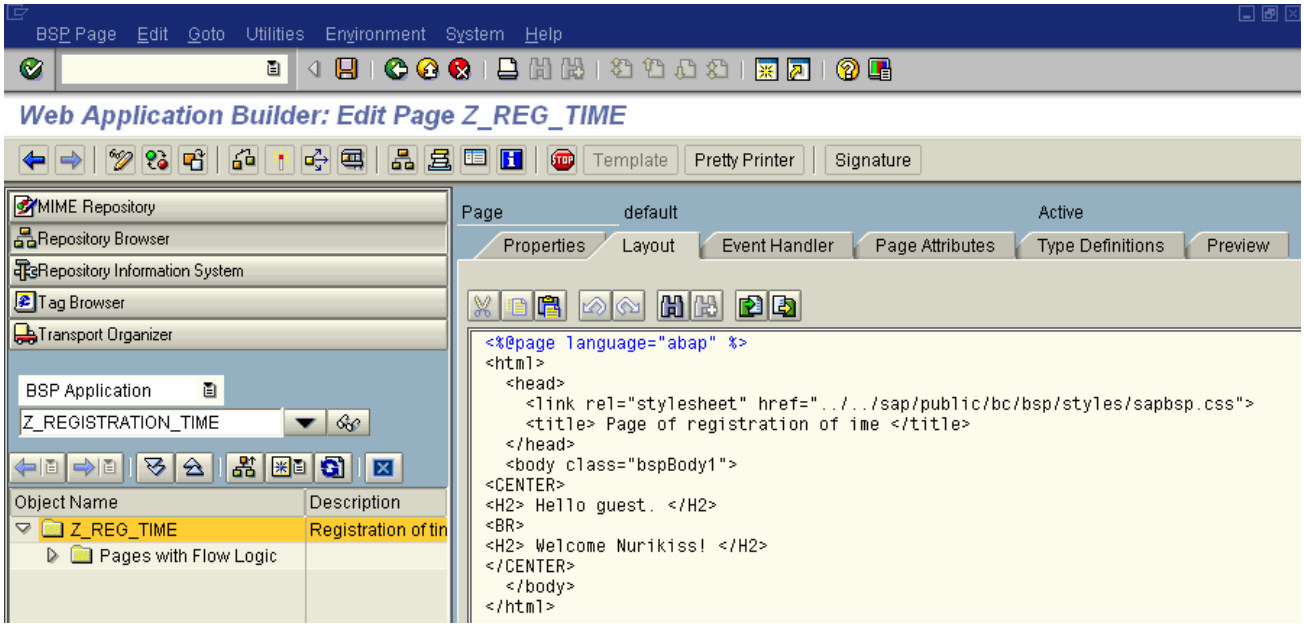
12.5 Some Training

We have looked for some example of the book SAP Web AS that we got from Jens and we have found one case of a flight system, so we have followed to start to design our website.

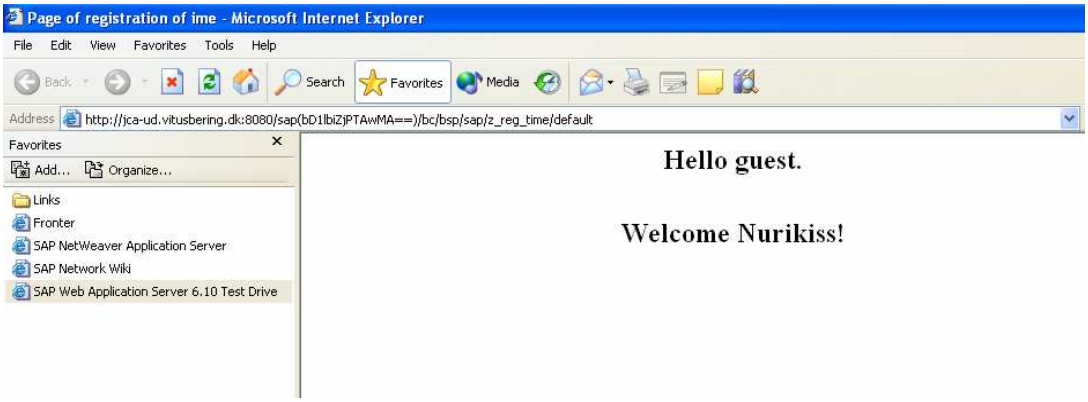
We have gone to the reposery browser to create our first BSP (Business Server Page) application. So we create our registration time object Z_REG_TIME in the temporal package $TMP.



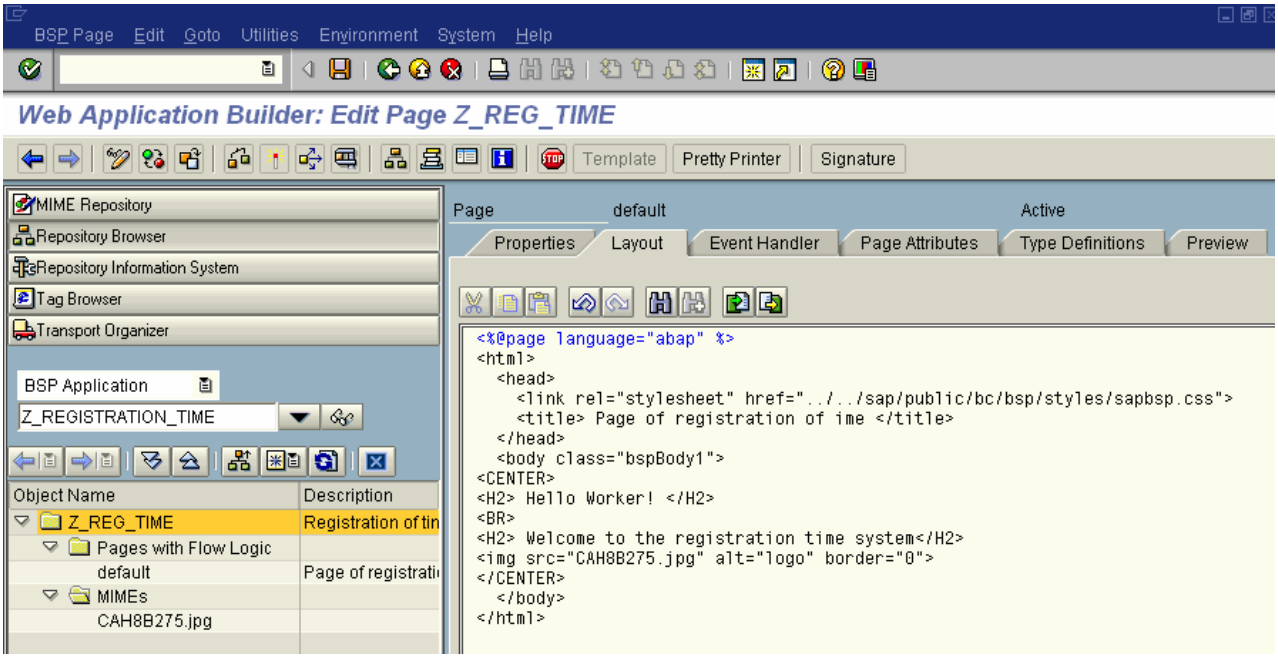
Done this, we have started to create some simple code in the layout tab. We have started showing only some basic text.



We test it…

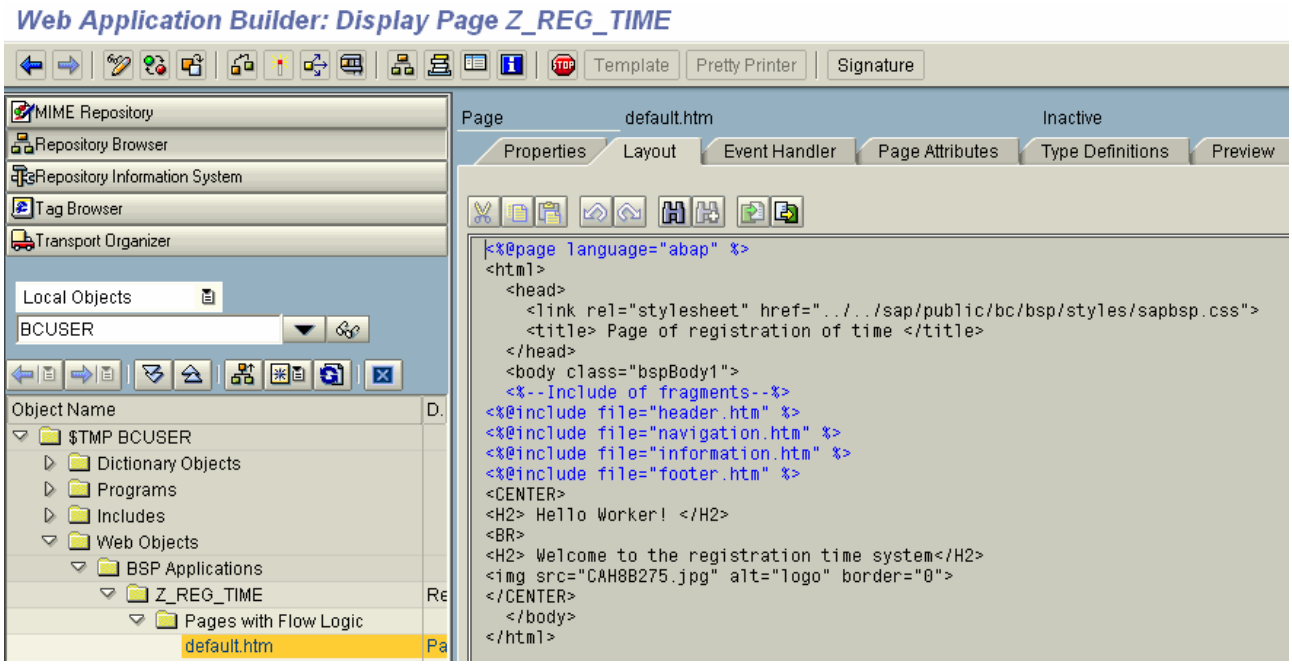


After we have added some image…



Test....

Then we have decided to structure the page in four fragments or frames. They will be: header, navigation, information and footer. We have included them in our default page.

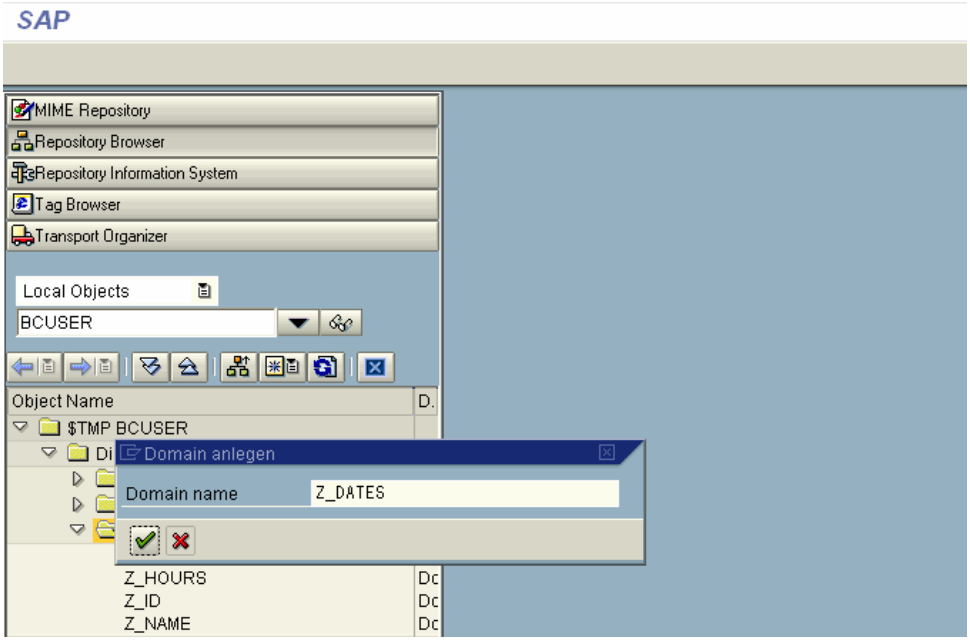


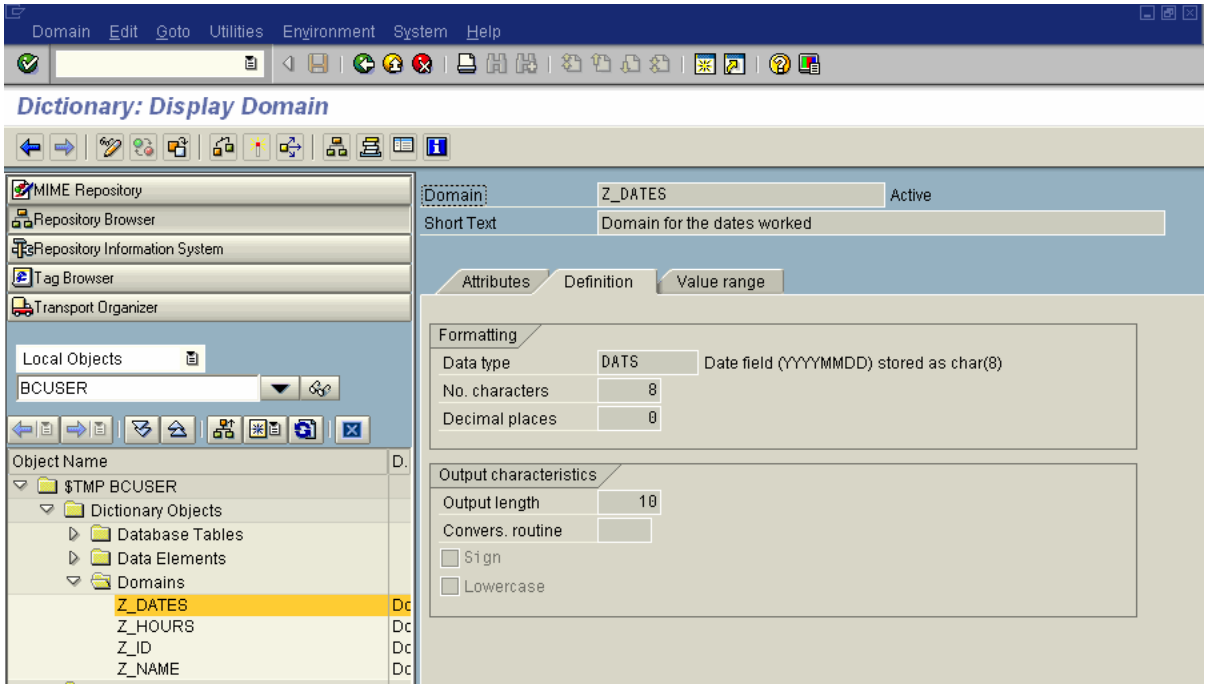
After this, we have decided that we have to create an index page or initial page that will not use these main frames. It will be different page for the welcome to our system and identify the user or worker.

12.6 Creating the Database

Domains:
For create the database it is necessary start creating the domains. We have created one ID domain that we will use for the identification of the projects and the developers. Another common domain of the projects and developers is the NAME domain. The next is the HOURS domain that we use to the hours that we have spent in one project. We have created also the domain DATES which is for know the dates when we have been working in one project.

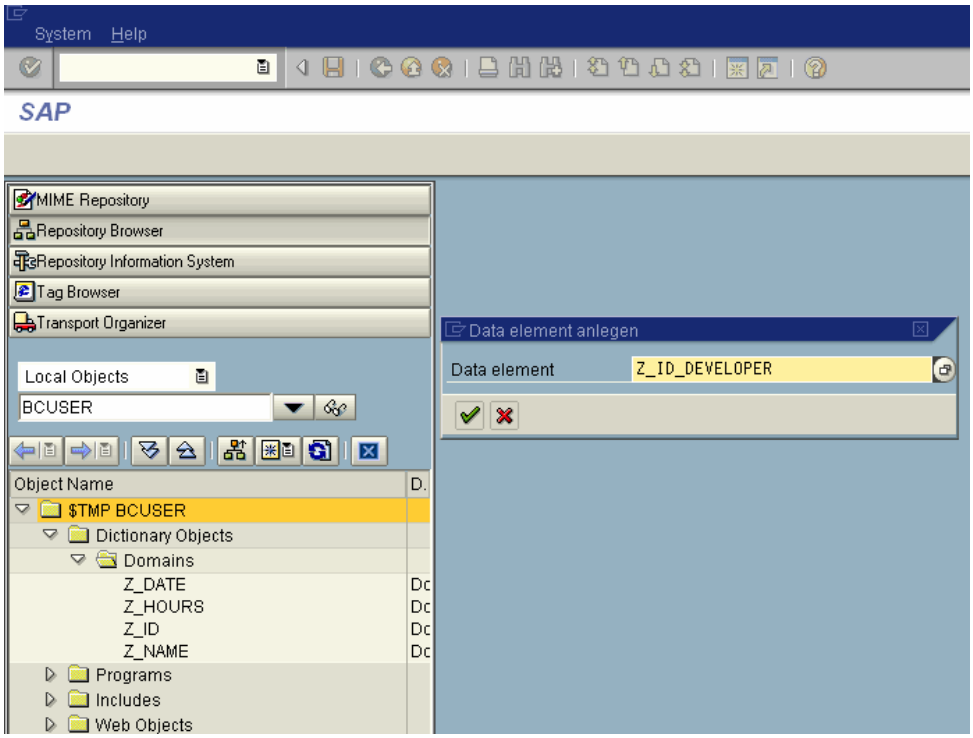
We show some screenshots:



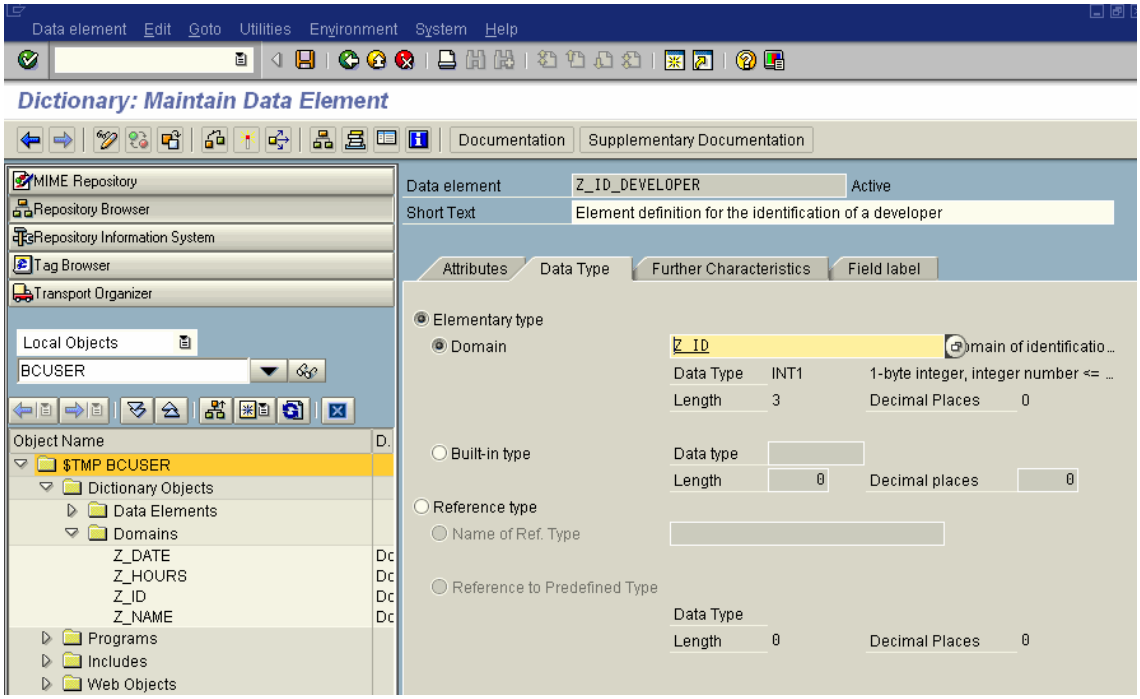


Data Elements:

We have created the data elements with the attributes main attributes that we need for our tables.

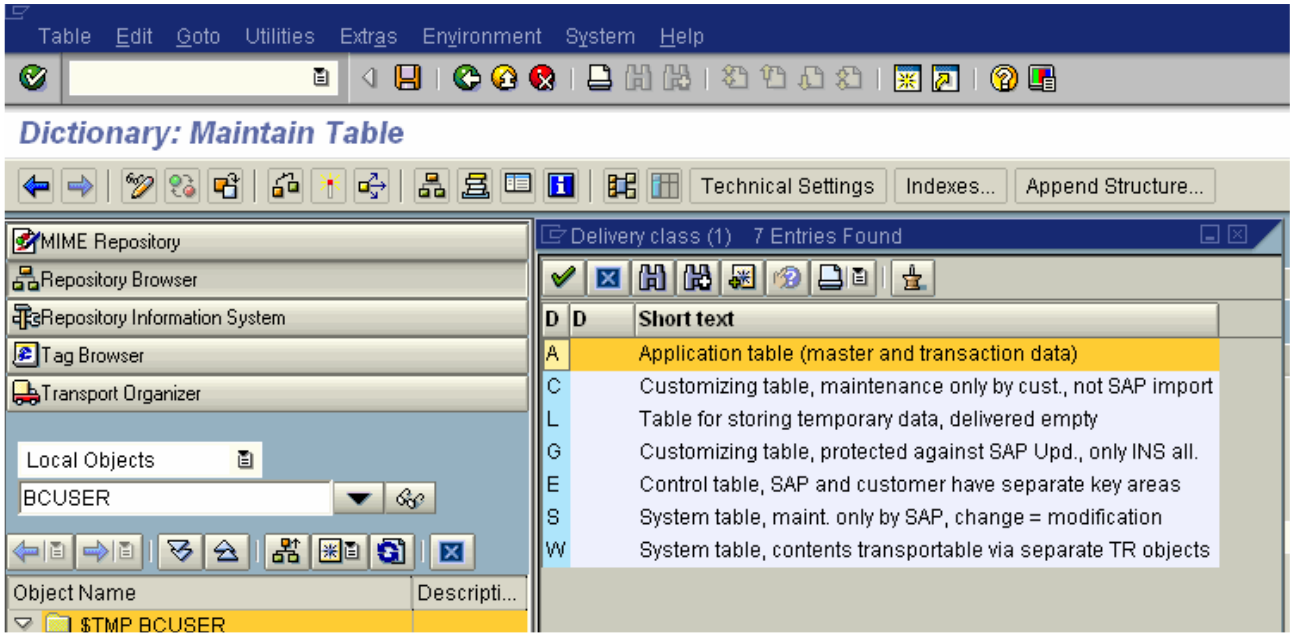


Every data element belong one domain. We have introduced some short description, data types, and length of the data.

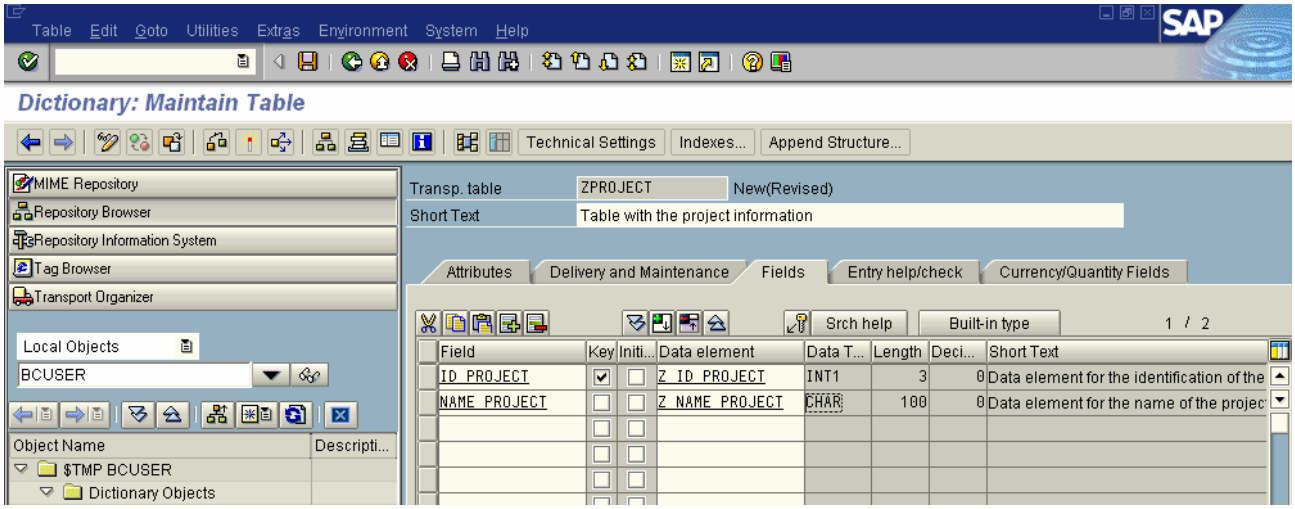


Database Tables:

Once that we have created the domains and data elements, we have created the databases tables as application table, indicated in the program with an A. We have 3 database tables, DEVELOPER, PROJECT and WORK.

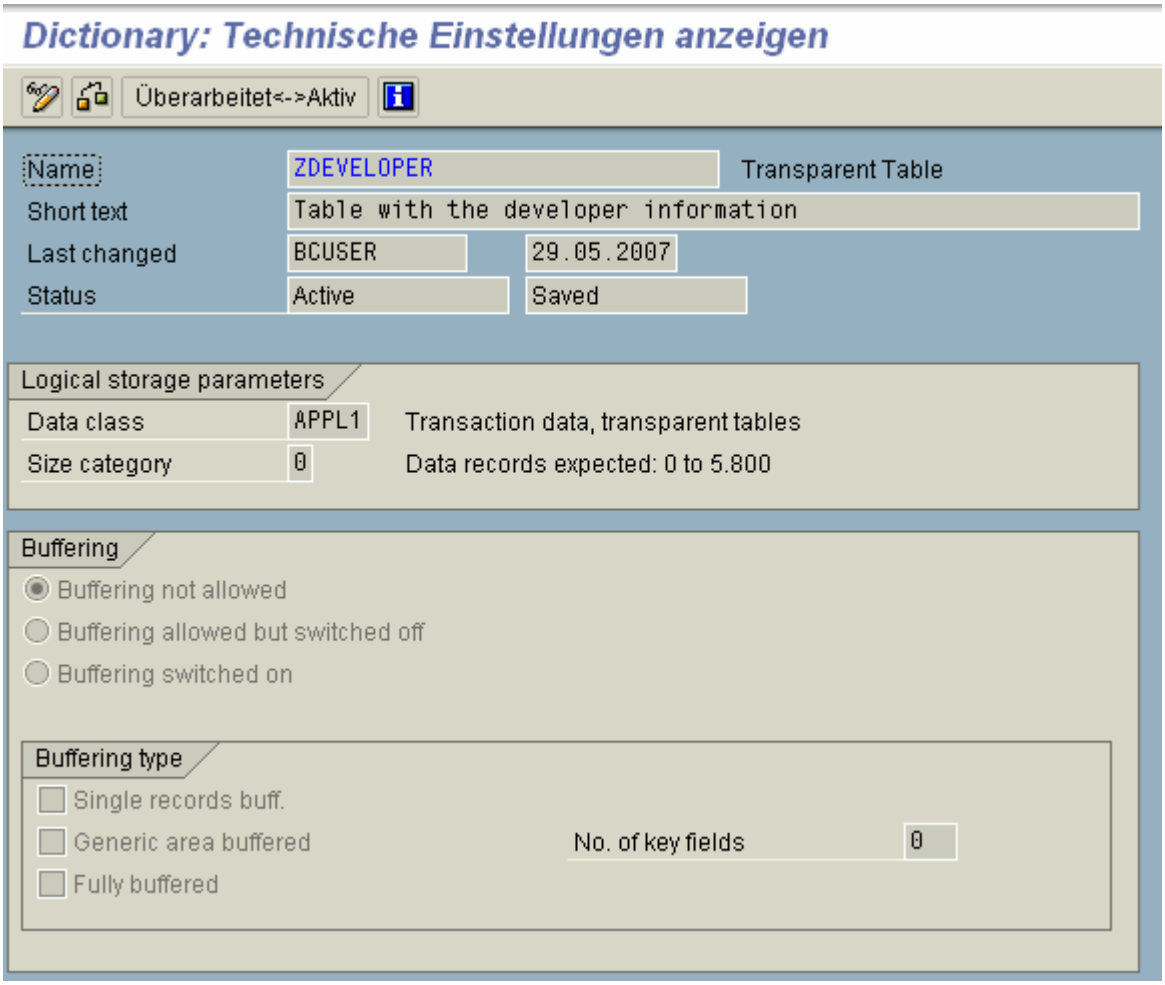


We have introduced in them the name of the fields referred the data elements. We see as example the ZPROJECT table:

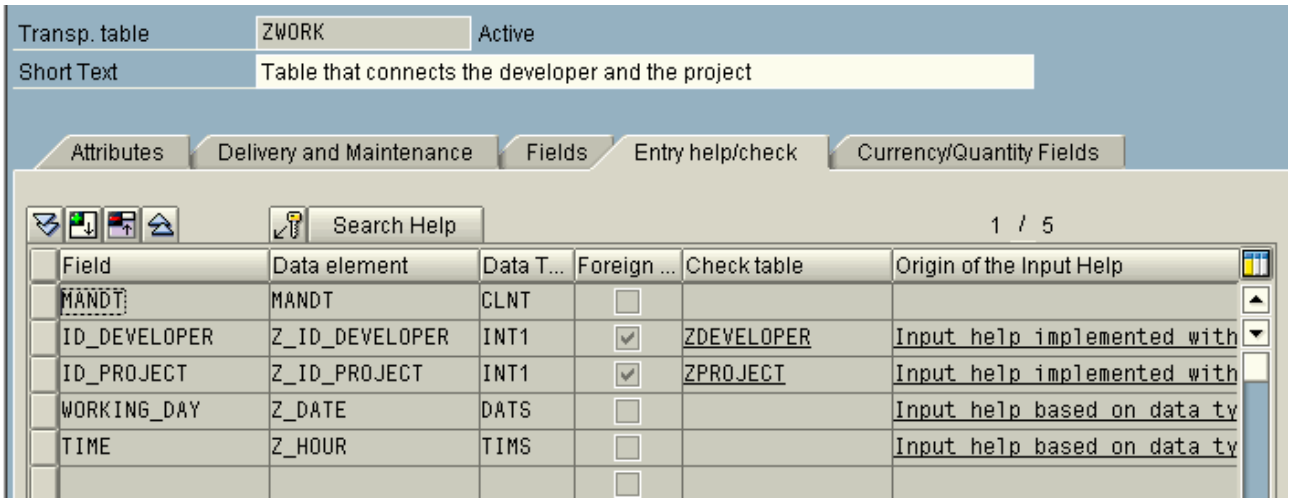


We have marked the primary keys and we can see the characteristics introduced of the data elements.

We have configured the technical settings of every table with a short description, data class, size category and buffering characteristics.



Finally in the database table ZWORK, we have added as foreign keys ID_DEVELOPER and ID_PROJECT.



12.7 Coding

Once that our installations of all the software are ready and the databases are working, we have arrived to the point of start to code.

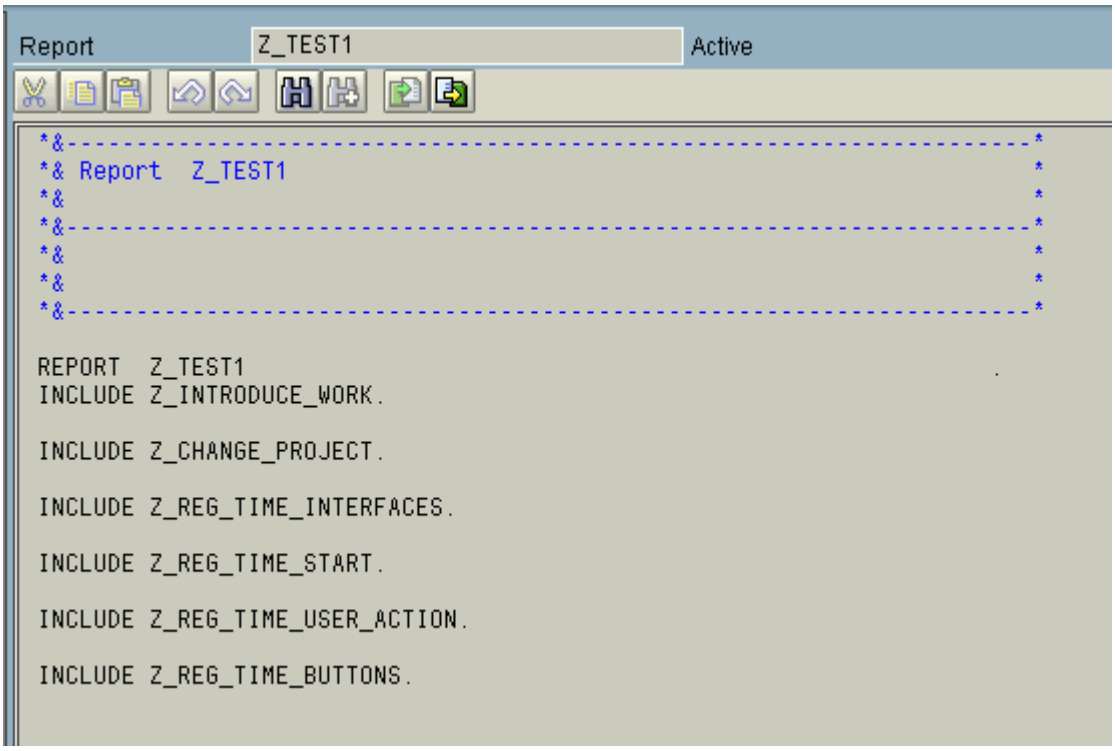
We have followed one of the examples of the ERP/SAP subject related with the development of interfaces. We have as dictionary structures our three tables ZDEVELOPER, ZPROJECT and ZWORK. As fields OK_CODE and SAVE_OK. We have created in events START-OF-SELECTION to call the initial screen of the future interface. We have created also the SET_STATUS as PBO module.

We have created to main classes which are the CHANGE_PROJECT class and INTRODUCE_WORK class. The first one is done for change the characteristics of a project that we have introduced. First of all we have done the definition to get the data of the project and to update it. After it we have done the implementation of these two methods. The second class, INTRODUCE _WORK has been created to do the connections between one developer and one project that we have introduced previously in our database tables ZPROJECT and ZDEVELOPER and save in the table ZWORK.

Then we have as in the part of includes our two classes, the start event that we were talking previously, another for the BUTTONS and other for the INTERFACES.

The last include is the REG_TIME_USER_ACTION. In this one, we define all the different “paths” through the screens of our interface that we will create later.

So finally we have our main program Z_TEST1 where we only have the includes that we have been talking about. Like this we get a modularized program.

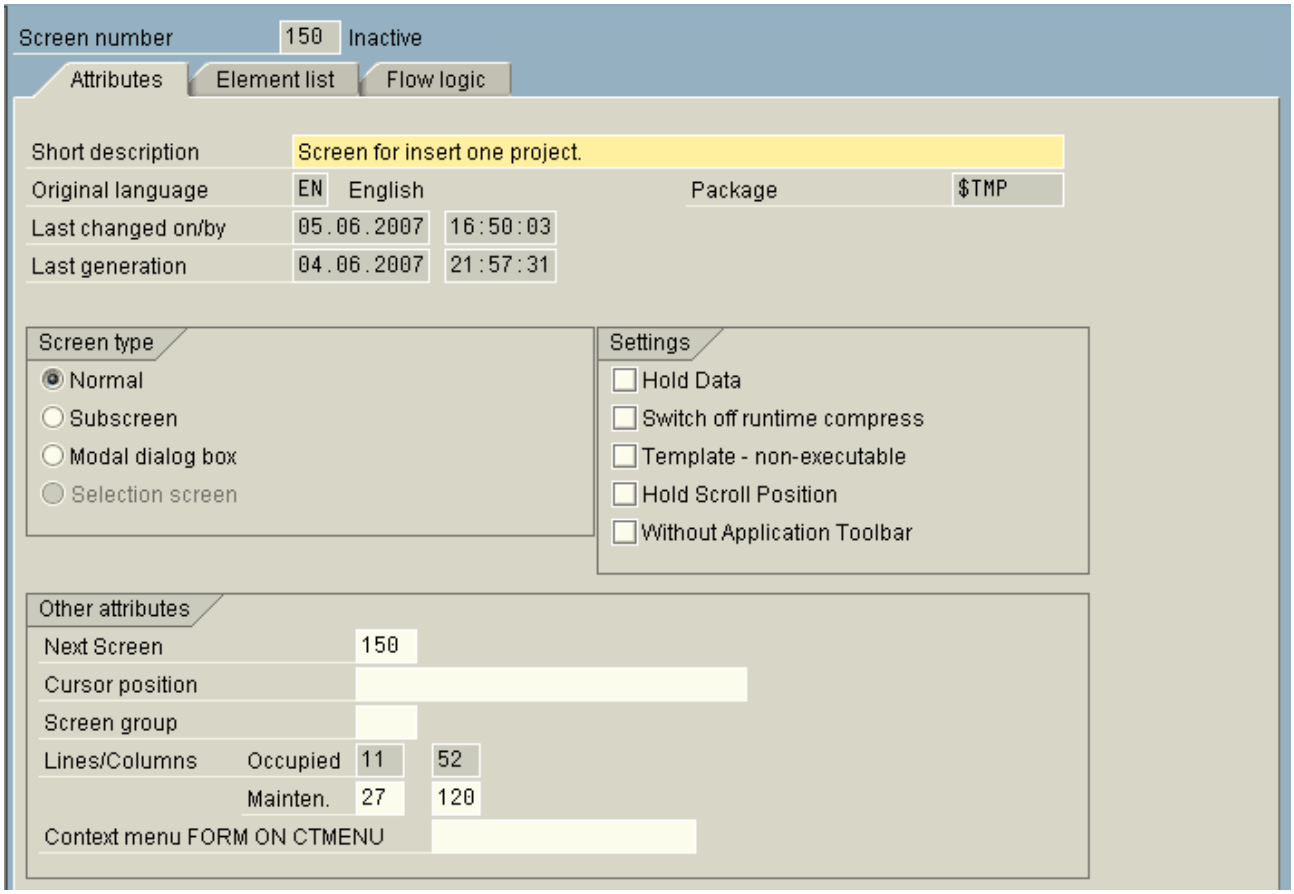


12.8 Creating the Screens

In this step, we have created the screens for the interface in the SAP application of our PC (that is not the same that we will see in the web application). We have to enumerate and assign the functions of them following what we have coded in the include of REG_TIME_USER_ACTION.

We are going to follow as example the sequence of create the screen 150, which has the three main options that we have used in all the screens, text fields, input/output fields and pushbuttons.

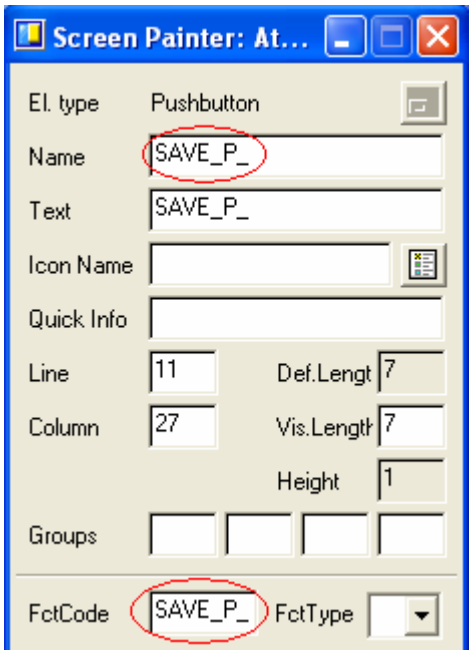
- We have selected create new screen that will be screen 150. We have introduced a short explanation of what the screen does. In this case is for insert one new project in our database ZPROJECT.



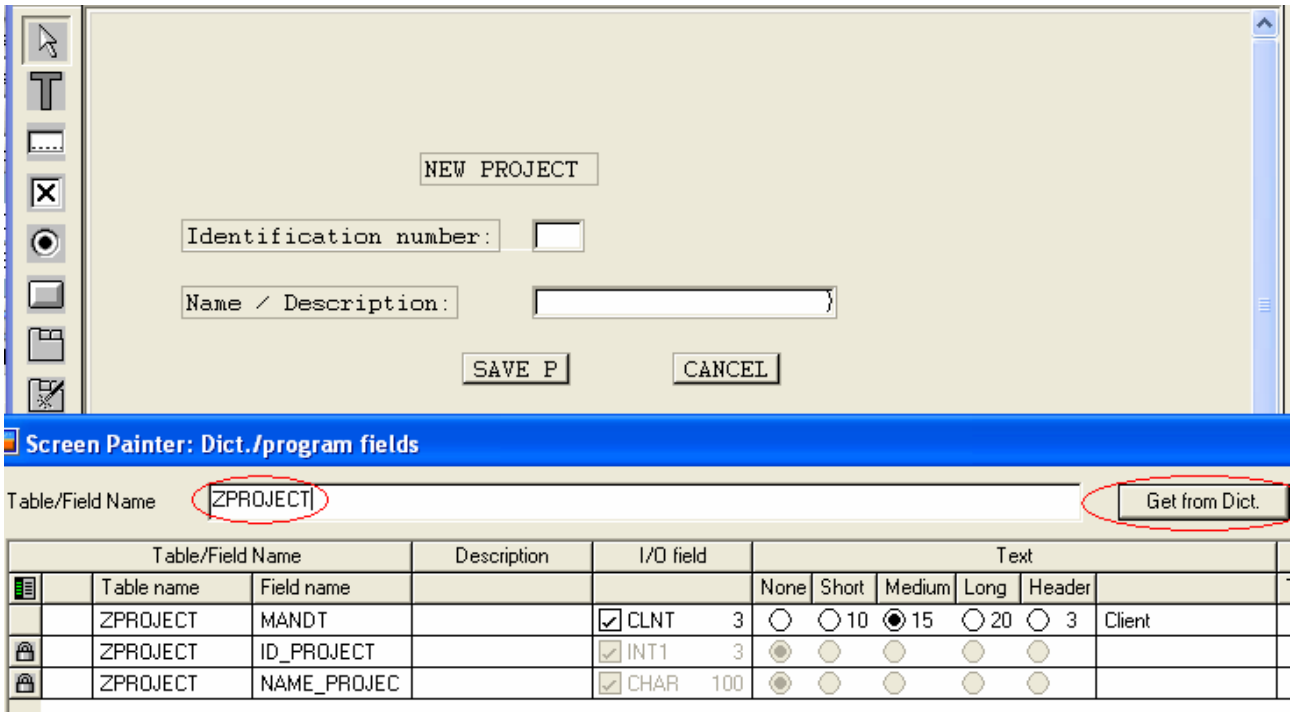
- If we press in the toolbar on the top of the screen in the option “Layout” and we access to the graphical interface to create screens.

- We have created the text fields that we need as some tittles, using the option in the toolbar in the left for this action.

- Now, we have to create the buttons. For example, the button to save the project. We have declared it in the include file REG_TIME_USER_ACTION as SAVE_P_. After create the button, we can not forget to complete it with some fields. We have to access to the "Attribute-Fenster", located in the top of the screen in an icon with a yellow square or do double click in the button. In this way we get the menu where we can fill the fields of "Name" and "FctCode".

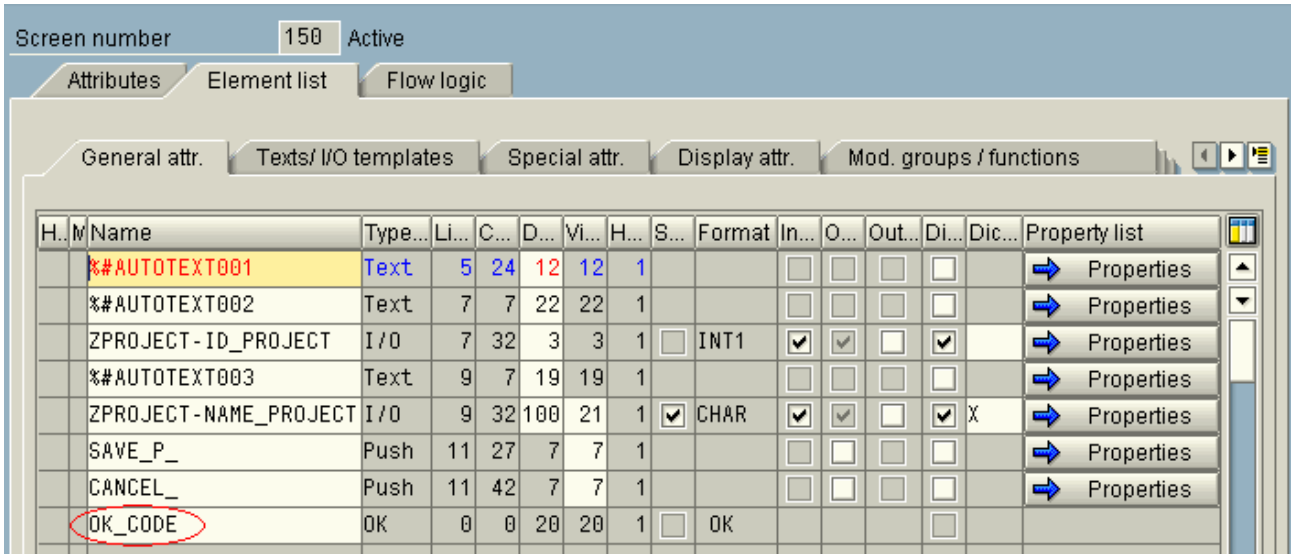


- For create the input/output fields we have to press in the option next to the previous one, "Dictionary/Programs fields window", an icon with a red square in it. We are trying to introduce the data of the new project so; we have to get the attributes of the table ZPROJECT. There, we can choose this one that we are interested. In this way we connect the data that we are going to introduce in this input field with the attribute of the database.

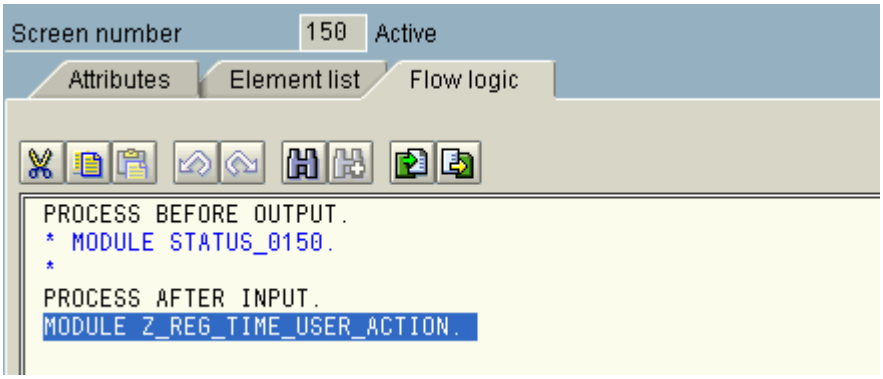


With these main options that we have used in this example, we have created all the screens necessary for get running the full interface of our program.

- But we don't have finished the configuration of our screen. We have to close the screen painter and the press in the tab "Element list" and "General attributes". There we have to activate the OK_CODE.



- Finally the last step to create and configure perfectly our screen. We have to go to the "Flow logic" tab and activate the screen for the module `Z_REG_TIME_USER_ACTION`.



12.9 Creating a Business Server Page.

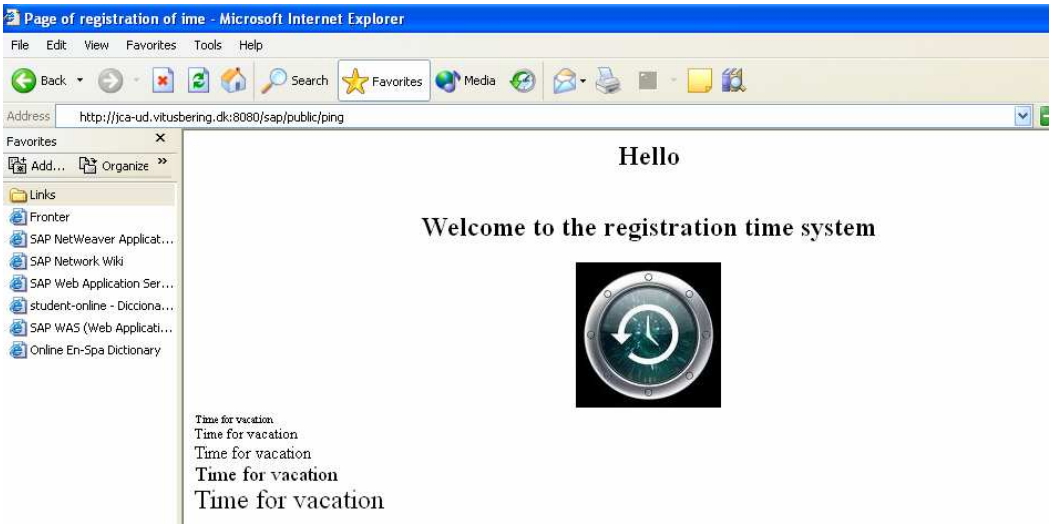
After creating the database and all the structures on the *SAP Workbrench*, we had to connect all this with the web page that will have the final application.

First we had to create and configure the bsp (business server page) server. And a bsp application is a standalone web application with presentation logic, workflow logic and application logic that are functionally self-contained.

To do it, we have been following the examples of the book[16] and we created a service called z_test_service.

Now that we had the server ready, we continued with some more examples of the book. This time we started writing some ABAP language inside the HTML files.

The example did a loop to show 5 times on screen a sentence reducing the size of the font each time. Find attached the picture with the result under these lines.



[16] "SAP® Web application Server", Frederic Heinemann and Christian Rau

After being sure that the server was running correctly, we started implementing the application.
We started with something easy: writing the name of the user that was logged on the main page. To do this we had all the structure of a simple web page written in HTML language and we added some scripts of ABAP language with the following command:

```
<% abap %>
```

With this line we were able to introduce some instructions to interact with the database and connect them with the web server. For example:

```
<H2> Hello <%= name %> </H2>
```

Once we had his we went to the main page. Both, the first page and the main page are flow logic pages. These pages offered the possibility to handle events and declare variables that would be useful afterwards.

After having the name on the first page to welcome the user, we created some fragment pages to configure the main page. We created 5 of them: the header, the menu navigator, the information part, the searching space and the footer. All these pages can have references to ABAP but they cannot declare any variable.

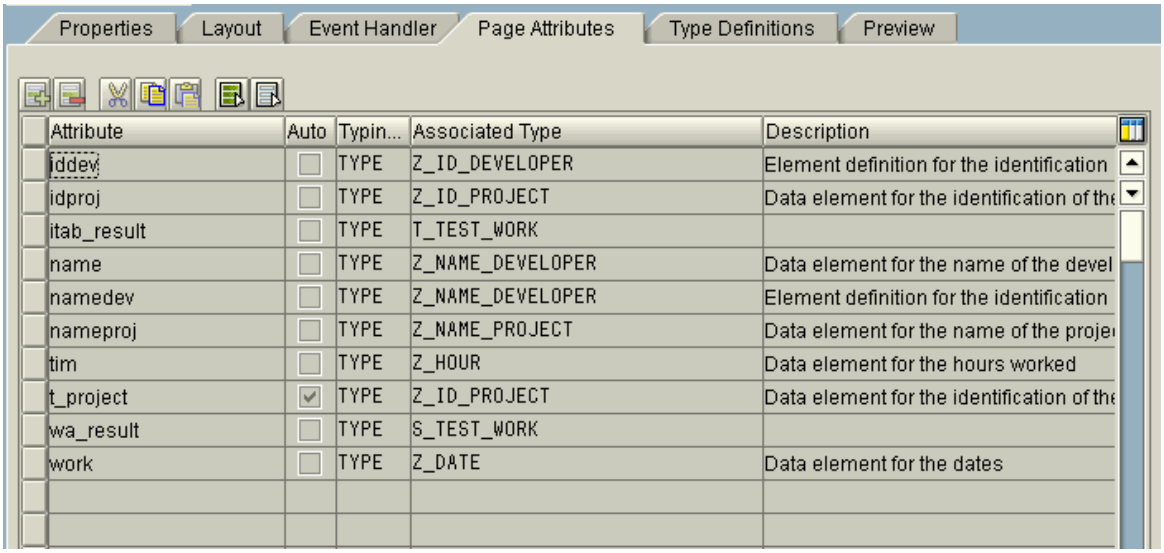
Then to include all the fragments in one page we had to write another command:

```
<%@include file="header.htm" %>
```

As a result we could divide the HTML and the ABAP code in small parts and make things easier. And if we start with the first fragment we can say that it is just a normal webpage with a table and the name of the application. The same as the navigation menu bar under the title. For the moment this was just an idea of how the application would look like if it was complete.

When we had this we focused on the displayed table. We had to show on a table the information on the database.

To do it we had to declare all the variables in the page attribute, and the structure of the table on the event handler onInicialization tab. With this we got a view of a table, an internal table that we could show on the screen of the web browser.



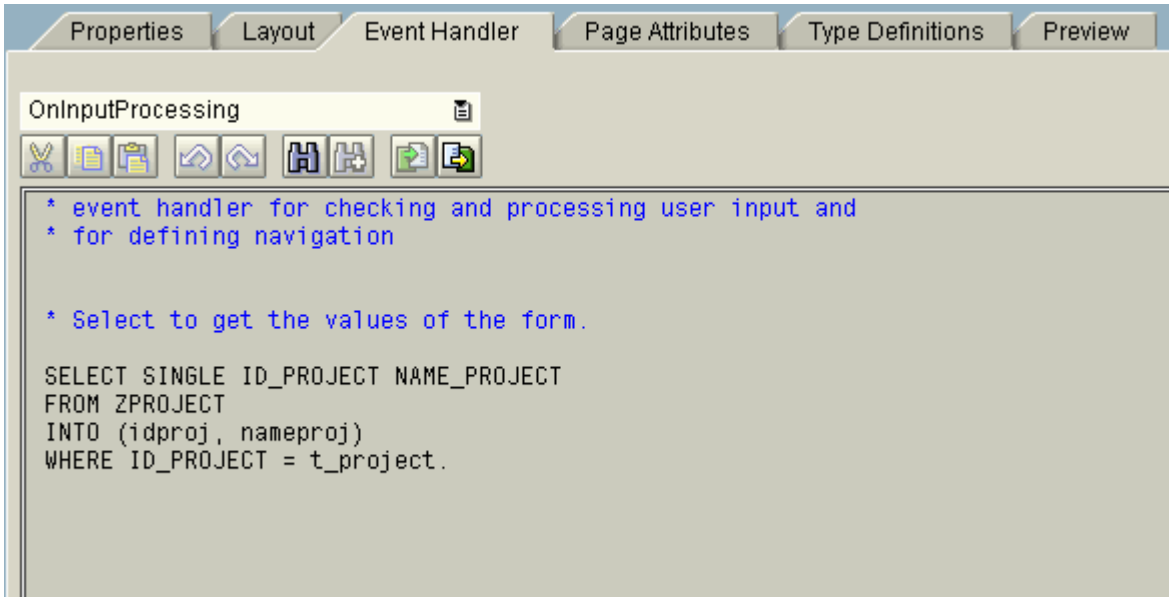
Attribute	Auto	Typin...	Associated Type	Description
iddev	☐	TYPE	Z_ID_DEVELOPER	Element definition for the identification
idproj	☐	TYPE	Z_ID_PROJECT	Data element for the identification of the
itab_result	☐	TYPE	T_TEST_WORK	
name	☐	TYPE	Z_NAME_DEVELOPER	Data element for the name of the devel
namedev	☐	TYPE	Z_NAME_DEVELOPER	Element definition for the identification
nameproj	☐	TYPE	Z_NAME_PROJECT	Data element for the name of the proje
tim	☐	TYPE	Z_HOUR	Data element for the hours worked
t_project	☑	TYPE	Z_ID_PROJECT	Data element for the identification of the
wa_result	☐	TYPE	S_TEST_WORK	
work	☐	TYPE	Z_DATE	Data element for the dates

We did a SELECT statement to get all the information we need (we used a Join) and we saved all data in a table. Then we created the table in HTML and we make references to the table created before.

Once this was done, we checked if it was everything ok. It took long and we made a lot of mistakes but finally we worked it out.

After seeing that the table was showing the 5 first rows of the table we continued with the searching forms.
Now we wanted to have a form so that the user could introduce a project id and get all the information with all the hours in a table.

To reach it, we did first the form in HTML as usual and then we did the select on the tab onInputProcessing. This tab is activated when something is send from a form to the database.



This part took so long because we did not realize that we had to activate the option *automatic* on the page attribute for the variable that we wanted to check, but finally we read this part on the book and we fixed the problem.

So now the main points that we wanted to reach from the beginning were done. That is why we spent some time to create the webpage following the HCI and UCD[17] steps. Moreover, we also did a bit of CSS (Cascade Sheet Style) file to have a template for the design of the web.

Find a bit of css file under this line:

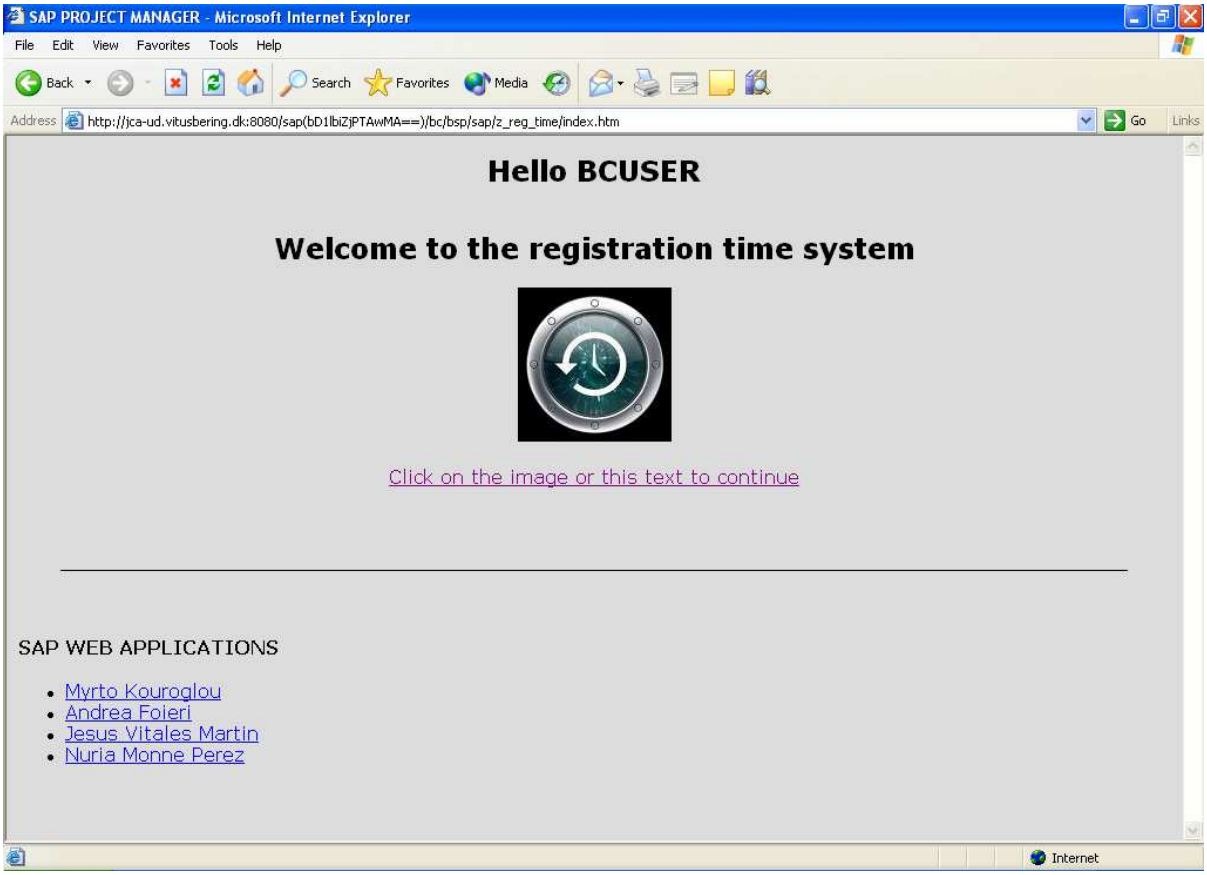
```
/* style for whole document */

        body{font-family:verdana; background-color:gainsboro; font-size:12pt; color:black}
        h2 {font-size:18pt}
```

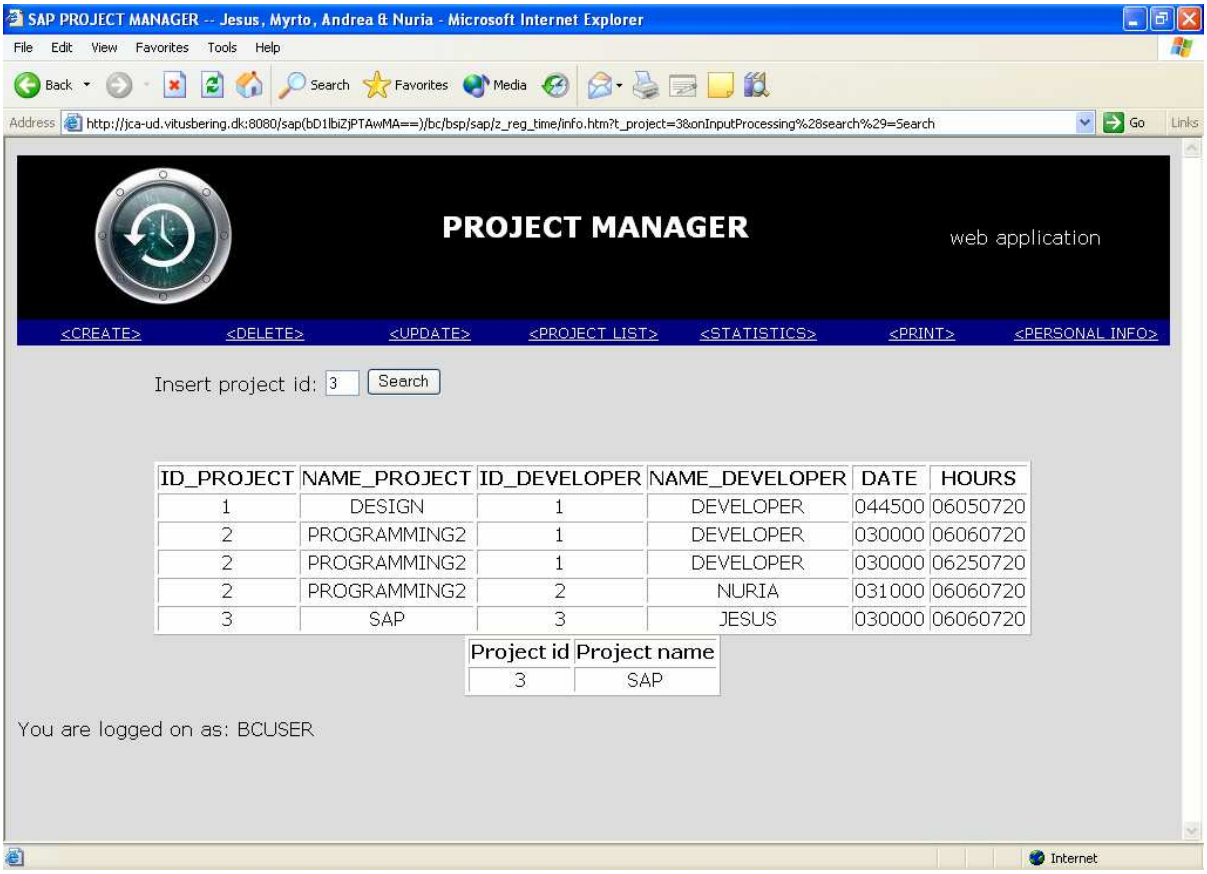
And to add this to the SAP web application we had to import it as a MIME file.

In addition, and as a final point, we wrote the title on the web and the email address of the members of the group.

Here attached you can see the main screens of the application:



[17] Human-Computer Interaction and User-Centered Design. Both of them described in chapters before.


SAP PROJECT MANAGER -- Jesus, Myrto, Andrea & Nuria - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://jca-ud.vitusbering.dk:8080/sap(bD1lbiZjPTAwMA==)/bc/bsp/sap/z_reg_time/info.htm?t_project=3&onInputProcessing%28search%29=Search
Go Links
PROJECT MANAGER
web application
<CREATE> <DELETE> <UPDATE> <PROJECT LIST> <STATISTICS> <PRINT> <PERSONAL INFO>
Insert project id: 3 Search
ID_PROJECT NAME_PROJECT ID_DEVELOPER NAME_DEVELOPER DATE HOURS
1 DESIGN 1 DEVELOPER 044500 06050720
2 PROGRAMMING2 1 DEVELOPER 030000 06060720
2 PROGRAMMING2 1 DEVELOPER 030000 06250720
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3 SAP 3 JESUS 030000 06060720
Project id Project name
3 SAP
You are logged on as: BCUSER
Internet

13. PROCESS REPORT (Business & Management)

- Our work started in the week 7, when we started with the class of Project Methodology. At that point we had the task to form groups that were supposed to work together on the final project.

- During the next three weeks we were speaking about the project, sharing ideas what could we do and discussing them. Also we had to define the final structure of the group.

- In the week 9 we had to hand-in the final decision about forming of the group and about the topic of our main project. At that point we have officially established our group and handed-in the preliminary ideas of the final project.

- Furthermore, we have been given our supervisor, Jens Cramer Alkjærsig, and we have started to arrange meetings with him concerning our part of the project.

- In the following weeks we have been working on the project until the deadline of 8th of June, according to our plan of project.

In details:

- We had the first meeting with the supervisor on the 7th of March and during this meeting we were discussing about the main idea of the project that could consist of a web site to sell and promote the products of the company.

- On the 14th of March we were discussing about the main idea stated in the previous meeting and at the end we decided to change the project in the development of a software application with SAP. Therefore, even if we didn't know exactly which kind of application the I.T. students were going to develop, we stated that our mission should have been the creation of a company, the study of the market and the promotion of the product.

- During the meeting of the 19th of March we decided to share our work in two different parts: one student – Myrto - should focus on the marketing part while the other – Andrea - should focus on the financial part. Consequently during the next weeks, as we didn't know exactly the features of the product, we started with the environmental researches, with the creation of the company (location, structure, legal form…) and with the general strategy (mission).

- In the week 17 we had a meeting with the supervisor and we were discussing about the features of the product. Therefore the marketing student started with some analysis of the market (market researches, SWOT analysis) and the financial student started with the preparation of the budgets.

- During the meeting of the 9th of May we only decided to continue our work with the analysis of the market and the budgets. Moreover, after this meeting we started to think about the marketing plan structure and about the real process of budgeting in figures, linked with the strategies of our company and the plans of growth of our business.
  Concerning the marketing plan, we decided that, even if the company would produce different applications, our marketing plan should have been focused only on the program that the I.T students were going to develop.

- On the 21st of May we defined the marketing plan structure and during the following week we worked on the marketing plan and on the liquidity budget for the first five years of activity. As at the beginning we had some problems with the choice of the market, after the analysis we decided to refer to the Danish market.

- During the week 22 we had two meetings and we were discussing with the supervisor about the final questions and details concerning the marketing plan, as at that point we had all the features of the product. For the financial part, we were discussing about the analysis of the budgets in order to see if the business would have been profitable.

- Finally we had the last meeting with the supervisor on the 4th of June, where we were discussing more details about the project and we defined the final structure of the report.

Cooperation in the Business & Management group

Myrto and Andrea were present in this group and working together on the final project. We made friendship and started to work together at the beginning of the semester and during all the time our cooperation was good and we have not encountered any bigger disagreements or arguing. It was the first time for both of us to work in such a project with a person from another country that you just know. Of course we had some different ways of working, thinking and different approaches how to solve problems, but we tried our best all the time to help each other in order to do the project well and successful. This was a great experience for both of us and we agree that it is a good base for further international group work.